FIRST ENGLISH EDITION

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A DESCRIPTION OF NEW Philoſophical Furnaces,

OR
A new ART of Diſtilling, divided into five parts.
Whereunto is added a Deſcription of
the Tincture of *GOLD*,
Or the true
AURUM POTABILE;
ALSO,
The Firſt part of the *MINERAL*
WORK.
Set forth and publiſhed for the ſakes of them
that are ſtudious of the *TRUTH*.

By JOHN RUDOLPH GLAUBER.

Set forth in Engliſh, By *J. F.* D. M.

LONDON, Printed by *Richard Coats*, for *Tho: Williams*, at
the Signe of the Bible in *Little-Britain*. 1651.

To his Honored Friend, *JOHN JENISON* in the BISHOPRICK of *DURHAM* ESQUIRE.

SIR,

PErceiving in you a ſingular ingenuity in penetrating into the *Arcana's* of nature, and a cheerful forwardneſs in a charitable improvement of the utmoſt of your experience in doing good to mankind, eſpecially to the deſpiſed poor, who cannot come with price in their hands, I eſteemed it as a ſervice well pleaſing to God, and moſt acceptable to man, to be inſtrumental in adding ſomewhat to that experience of yours, and of thoſe of like publick ſpirit with your ſelf, thereby enabling you to be yet more ſerviceable to this your generation: I therefore here preſent you with a rich Cabinet of natures unvaluable Jewels; But know, that it hath many doors, the one whereof as being ſhut to many, but not to all, I have opened with an Engliſh key; the other muſt be entred by a penetrating judgement quickened with Celeſtial lightening. Now where there are publick ſpirits, profound Meditations and a conſtant induſtry, Divine illumination is at the door. The large and boundleſs ſecrets of Nature will not attend private intereſts, nor the deep myſteries of Nature be fathomed by ſhallow apprehenſions, no nor her fair daughters be courted by inconſtant ſervants. But you are otherwiſe qualified then to deſpaire of ſeeing her ſelf in her own colours: She unvailes her ſelf to thoſe only that will admire her beauty, and not to thoſe that will caſt dirt in her face, being altogether unable to judge of her features.

This *Philoſophical* Treatiſe being frequently & profoundly read may be underſtood, and being underſtood by you wil qualifie you with ſuch capacities, that you may be able to make not only all the poor in your country rich, but al the ſick healthy, and thereby bring to your ſelf as much honor as mortality need care for. Accept of theſe my endeavors as proceeding from a ſenſibleneſs of your unfeigned love, and reſpects to him who is

Sir,

Yours affectionatly to love and ſerve you

J. F.

Engliſh Reader,

F*inding the ſecond being the greateſt part of this treatiſe in private hands already tranſlated into Engliſh by a learned* German, *I was willing, it being in ſuch a forwardneſs, to ſet a aſide for thy good, ſome few hours to teach the other parts thereof ſpeak the ſame language. It is pitty that ſuch uſeful and ſo learned writings ſhould be obſcured from the Engliſh Nation. Many indeed would not have any that underſtand no other language but that of* England *to read any thing of learning but what is originally writ in Engliſh: and what is the reaſon? Is it becauſe they would have* England *kept in ignorance, or becauſe they think they are not able to underſtand any thing beſides what is writ in their mother tongue. This is my judgement that they that be intelligent may underſtand intelligible things although they do not underſtand Latin or German words, as well as great linguiſt themſelves: for I do not believe that tongues do enlarge the capacity any otherwiſe then they enable any one for the reading of learned Anthors. I am ſo far from having men confined to the knowing of things writ only in their own language, that I wiſh that all things truely worth knowing were writ in every language of the world, that intelligent men of all Nations may the better underſtand intelligible thiugs. I abhor to think that any ſhould make a Monopolie of learning which conſiſts more in the undreſtanding of* *things, then of tongues. Why ſhould any be unwilling that learning and Philoſophy both theoretical and practical ſhould be propagated? Are not Philoſophers the beſt moralized men, of the pureſt lives, and moſt ſerviceable in their generation? It ſhall be my practiſe as long as I live to be inſtrumental in promoting true knowledge, wheaher by way of Tranſlation, or any other way of making what is occult manifeſt. Now as for this treatiſe in ſtead of a commendatory Epiſtle, it is ſufficient to ſay that* Glauber *is the Author of it. He is carryed upon the wings of Fame throughout the whole world. His Fame all know is great, and flyes high, but his worth ſurmounts his Fame. He is a Philoſopher and Chymiſt indeed, as appears by this enſuing Treatiſe, in which are diſcovered ſuch ſecrets that by the help thereof being underſtood (as poſſible they may) the pooreſt man may in a ſhort time become very rich, the moſt ſickly very healthy, and the baſeſt truely honorable. In this tranſlation look not ſo much at words as things, as I my ſelf did: and as for Errata's which perhaps may prove many beſides what I have obſerved in my curſory reading, be thou ſo courteous as to impute them neither to the Printer nor my ſelf, but my abſence from the town all the time the book was in the Preſs. This together with thine acceptance ſhall oblige*

Thy Friend

J. F.

A Preface

A Preface to the Courteous Reader.

I Have hitherto reſerved to my ſelf as ſecrets, ſome peculiar furnaces and compendious wayes of diſtilling, which with diligent ſtudy and ſpeculation I found out ſome few yeers ſince, by which many excellent works, impoſſible to be done by the vulgar art, may be performed; but now at laſt I have, conſidering with my ſelf how advantagious it may be to the world, determined to conceale this art no longer, but for the good of my neighbour to publiſh it, by giving to Chymiſts a perfect and fundamental information of this new invented art, that they may no longer for the future ſpend their time, and expend their coſts in long tedious operations, but may after a more eaſie way by the help of my furnaces be able to effect many excellent things. Now this book ſhall be divided into five parts, the firſt whereof ſhall teach how to build a furnace, in which incombuſtible things are diſtilled and ſublimed, and indeed ſuch things which cannot be done by retort or any other veſſels, and how the Spirits, Flowers, and Oyles of Minerals, and Metals may by the help thereof be prepared, as alſo what their uſe, and vertues are.

In the ſecond part ſhall be ſhewed another furnace, in which combuſtible things, as Vegetables, Animals, and Minerals are diſtilled and moſt perfectly ſubtilized: by help whereof many moſt excellent medicaments for the cure of moſt grievous and otherwiſe incurable diſeaſes and effects may be prepared.

In the third ſhall be taught a certain new invention hitherto unknown, of diſtilling burning ſpirits, as of Wine, Corne, Fruits, Flowers, Hearbs and Roots; as alſo the waters of Vegetables and Animals, and that in a great quantity, in a ſhort time, and without much coſts; as alſo of boyling Beer, Hydromel, Wine, and other things, which otherwiſe are made in Copper or Iron veſſels; and all this by the help of wooden veſſels, and benefit of a certain ſmal Copper, or Iron inſtrument of two or three pound weight, and that after a certain eaſie maner without furnaces. This newly invented Art doth alſo teach divers Chymical operations, as putrefactions, digeſtions, circulations, extractions, abſtractions, cohobations, fixations, &c. And this invention is very neceſſary and profitable for young beginners in this Art, for they need not in the making of burning ſpirits, waters of Vegetables, Extracts, and other Medicaments ſo many Furnaces, and ſo many Copper, Iron, Tin, Earthen and Glaſs veſſels, for it is here taught how all the aforeſaid operations may be done only by the help of a certain ſmal Copper or Iron veſſel in wooden veſſels as well as by Alembicks and other great Copper veſſels, by which meanes a great deal of coſts is ſaved,

In the fourth part ſhall be taught another certaine, and hitherto unknown furnace, in which all Chymical operations may moſt eaſily be done: being moſt profitable for the trying of the natures of Minerals and Metals; as alſo for the proving, examining, melting, cupelling, and ſeparating of Metals, that nothing may be loſt of them, and that after a compendious and eaſie way, and that alſo to great advantage.

In the fifth ſhall be taught how to make and prepare Iron, Earthen, Glaſs, and other kind of Inſtruments neceſſary for the aforeſaid four furnaces, as alſo other neceſſary, and moſt profitable Manuals.

And indeed in the firſt part, the Fabrick of the firſt furnace being delineated, I ſhall alſo ſhew how by the help thereof may be made Spirits, Oyles, Flowers, and other moſt profitable Medicaments, alſo their vertues and uſe, and that as faithfully as I may, and without fraud. And truly I do not doubt but thoſe of underſtanding will approve of this work, but ignorant *Zoiles* will contemne it: For it is ſaid according to the Proverb, *He that builds by the high way will hear many things from them that finde fault*, and eſpecially from the vulgar, &c. But it would be well if thoſe *Thraſoees* would put forth ſomething more excellent, before they finde fault with and carp at other mens paines and labours.

Wherefore let no one raſhly judge of this work, untill he be throughly informed concerning the ſame, and then I do not doubt but the Authour ſhall be by him commended.

And if haply all things ſhall not preſently ſucceed well, to his minde, with him that ſhall build this furnace, and operate therewith, let him think with himſelf, that prehaps he hath erred in ſome part (for it is a new and unknown work, in which any one may eaſily erre) and not preſently therefore murmur againſt the Author, blameing him, becauſe he hath not wrote cleer enough, but let him aſcribe it to his own ignorance, and let him ſtudy to underſtand the Authours meaning, and ſtill be practiſing upon it, and then I do not doubt, but he will have better ſucceſs, which I pray every one may have, AMEN.

THE FIRST PART OF PHILOSOPHICAL FURNACES:

CONTAINING A

NEW ART

OF

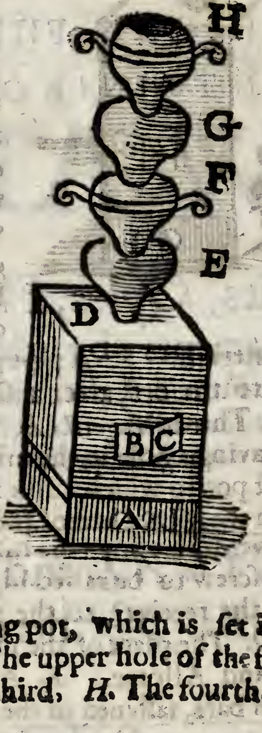
Making Spirits, Oyles, Flowers, and
other Medicaments by the help of
the firſt of thoſe Furnaces, after a moſt eaſie, and
peculiar manner out of Vegetables, Animals, and
that with great profit:

ALSO

The *CHYMICAL* and *MEDICINAL* uſe thereof.

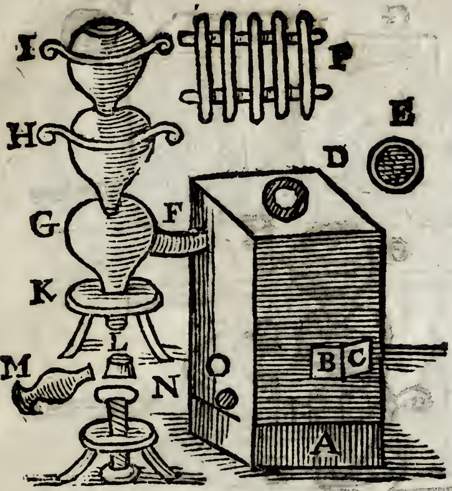
By JOHN RUDOLPH GLAUBER.

LONDON,
Printed by *Richard Cotes*, for *Tho: Williams* at the ſigne
of the Bible in *Little-Britain*. 1652.

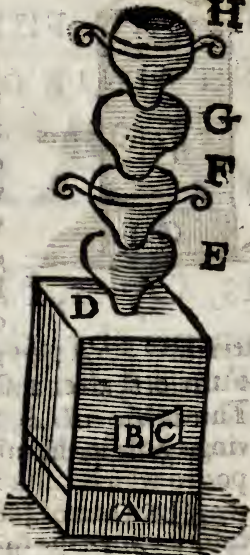


E. The firſt ſubliming pot, which is ſet into the upper hole of the furnace. *D.* The upper hole of the furnace. *F.* The ſecond pot. *G.* The third. *H.* The fourth.

A. The



A. The aſh hole with the wideneſs of the furnace. *B.* the middle hole by which the coals and matter to be diſtilled are caſt in. *C.* A ſtopple of ſtone which is to ſtop the ſaid hole after injection. *D.* The upper hole with a certain falſe bottome which is to be filled with ſand. *E.* The cover of the upper hole, which is laid on after the injection of the coales and materials. *F.* A pipe going out of the receiver, and joyned to the firſt pot. *G.* The firſt receiver, *H.* The ſecond. *I.* The third. *K.* A ſtoole on which the firſt receiver ſtands, having a hole in the middle, through which the neck of the firſt pot to which a diſh is annexed, paſſeth. *L.* The diſh, through the pipe whereof the refrigerated ſpirits diſtill. *M.* A receiver into which the ſpirits collected in the diſh do flow. *N.* A ſcrew to be raiſed higher at pleaſure for the better joyning the receiver to the pipe, and it goeth through a ſtoole. *O.* The place of the pipe for the diſtilling of ſpirit of Vitriol and Allome. *P.* A grate conſiſting of two ſtrong croſs iron bars, faſtened in the furnace, and foure or five more leſs that are moveable, for the better cleanſing of the furnace.



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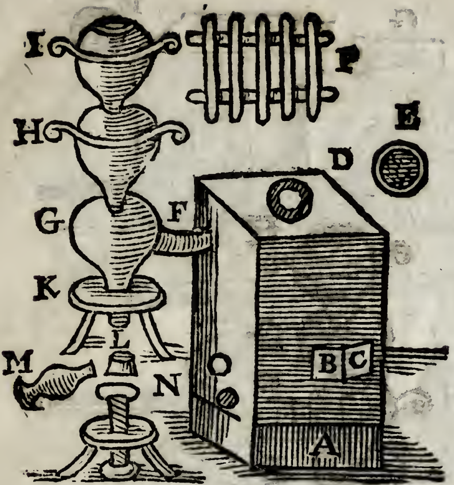
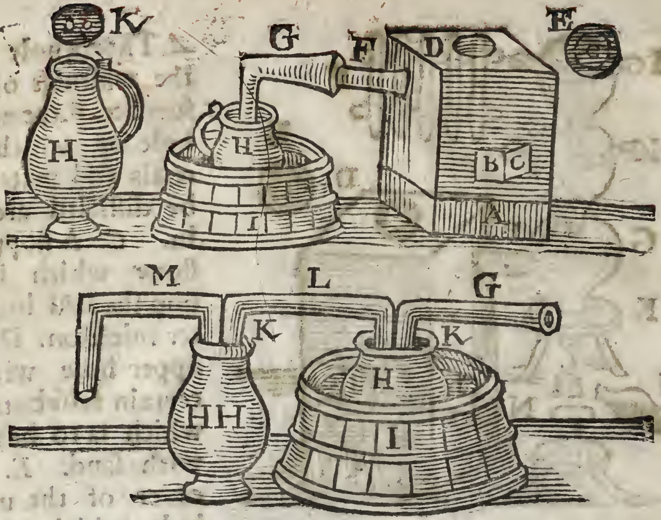


A. The aſh hole with the wideneſs of the furnace. *B.* the middle hole by which the coals and matter to be diſtilled are caſt in. *C.* A ſtopple of ſtone which is to ſtop the ſaid hole after injection. *D.* The upper hole with a certain falſe bottome which is to be filled with ſand. *E.* The cover of the upper hole, which is laid on after the injection of the coales and materials. *F.* A pipe going out of the receiver, and joyned to the firſt pot. *C.* The firſt receiver, *H.* The ſecond. *I.* The third. *K.* A ſtoole on which the firſt receiver ſtands, having a hole in the middle, through which the neck of the firſt pot to which a diſh is annexed, paſſeth. *L.* The diſh, through the pipe whereof the refrigerated ſpirits diſtill. *M.* A receiver into which the ſpirits collected in the diſh do flow. *N.* A ſcrew to be raiſed higher at pleaſure for the better joyning the receiver to the pipe, and it goeth through a ſtoole. *O.* The place of the pipe for the diſtilling of ſpirit of Vitriol and Allome. *P.* A grate conſiſting of two ſtrong croſs iron bars, faſtened in the furnace, and foure or five more leſs that are moveable, for the better cleanſing of the furnace.



G. The firſt crooked pipe fitted to the pipe of the furnace. *F.* The pipe of the furnace. *H.* A receiver fitted to that pipe, and ſet in a tub of water for the accelerating the operations which recipient hath a cover with two holes through the firſt whereof goeth a ſingle crooked pipe, and through the other two crooked pipes, whereof one goeth into the receiver as did the ſingle, and the other out of the receiver *H.* into *H. H.* *I.* The tub of water. *M.* A third pipe.

By this way flowers are ſublimed, and ſpirits diſtilled ſpeedily and in great quantity.

J. Revett

THE FIRST PART OF PHILOSOPHICAL FURNACES.

Of the ſtructure of the firſt Furnace.

AS for the firſt Furnace it may be built greater or leſſer as you pleaſe, a regard being had of the quantity of the ~~water~~ matter to be diſtilled, and alſo either round or ſquare; either of Bricks or by a Potter with Potters clay. Now when the Diameter is of one ſpan, *viz.* withinſide, the height muſt be of four, *viz.* one from the bottom to the grate, another from the grate to the hole made for putting in of Coales, and two from thence to the top of the Pipe, which muſt at leaſt go forth out of the Furnace one ſpan, leſt the receivers ſhould by the ~~warms~~ neernes of the Furnace be heated. The Pipe alſo muſt have on the fore part a Diameter, anſwering the third part of the intrinſecal Diameter of the Furnace; alſo a little larger on the hinder part then the forepart. Let the grate be ſuch a one, as may be taken out at your matter

pleaſure and made clean, being ſtopt by the ~~water~~ that is caſt in and diſtilled: for it is eaſily ſtopt in diſtilling of Salts melted with the coales, whereby the aire is kept from coming to the fire, and the diſtillation by conſequence hindred; Or let there be furnace. put into the ~~veſſel~~ croſs-wiſe two ſtrong Iron bars, upon which lay four or five leſſer, diſtant the one from the other the breadth of a finger, going a little out of the Furnace, ~~in~~ by which when they are ſtopt, you may take them with a + paire of Tongs, + matter ſtir them, and cleanſe them from the burnt ~~water~~, and then again put them into their own places: wherefore alſo the Furnace muſt on the fore part be open under the grate, that you may the better order the grate.

Alſo the grate muſt have above, a covering of Iron or Stone, with a hole in the midle thereof with a certain diſtinction, which is to be filled with ſand, that the cover may the better and more fitly ſhut the hole, and prevent the exhaling of the ſpirits which by this means will being forced, go forth + thorow the Pipe into + matter the receivers, after you have caſt in the ~~water~~ which is to be diſtilled.

Of the Receivers.

Let the receivers be made of glaſs, or of ſtrong earth, which may retain the ſpirits, and ſuch is Waldburgick, Haſſiack, Frechheimenſian, Siburgic earth, &c. They are better that are made of glaſs, if they are to be had, and thoſe eſpecially which are made of ſtrong and firme glaſs, which may be ſmoothed about the joynts with a Smiris ſtone, and ſo fitted that they may the better be joyned together, and then they need not ~~laving~~ luting (but how they ſhall be ſmoothed with the Smiris ſtone, and be ~~fitted~~, luted ſhall be taught in the fifth part, which treates of Manuals) becauſe by this means they are joyned ſo cloſe, that no ſpirits can go through the joynts: otherwiſe you muſt cloſe the joynts with the beſt lute, ſuch as will not let the ſpirits exhale, which ſhall be taught in the book treating of Manuals. The form of the recipient you may ſee in the delineation thereof. As for the quantity thereof, know that by how much the greater they are, ſo much the better they are, for then you need the fewer, but the more, by how much the leſſer they are. Let the ſuperior orifice be larger then the inferior, ſo that alwayes another receiver may with its inferior orifice be joyned to it, and let the inferior orifice have a Diameter of three fingers breadth or thereabouts, I mean in caſe the Diameter of the Furnace be of one ſpan. For a greater Furnace requires greater holes, as alſo orifices of the receivers, by which means a ſufficient, and due proportion of aire may be given to the fire: or if the Diameter of the furnace be more then a ſpan, it muſt alſo have two or three pipes (which being conſidered together ſhould have a wideneſs anſwering the wideneſs of the third part of the Furnace, for ſo great a wideneſs, and ſo much aire is required, if the fire burn freely and do its office) to which veſſels of the aforeſaid proportion muſt be applyed, that the fire be not choaked.

Now the figure that is annexed will teach the conjunction of the receivers, as alſo their application to the furnace. And in the firſt place the receiver ſtands in a threefoot ſtoole bored thorow in the middle, that the neck of the firſt receiver may paſs thorow, to which is applyed a diſh with a pipe receiving the dropping ſpirits: To the firſt there is joyned a ſecond, and to that a third, and ſo conſequently (*viz.* neer unto a wall or ladder) ſo many as you pleaſe. Let the upper receiver, and indeed, all the reſt be left open; To the lower, as hath been ſaid is joyned a diſh with a pipe, by which the diſtilled ſpirits run down into another certain glaſs veſſel added thereunto, which being filled is taken away, and another is ſet in the place of it, becauſe that is ſet under it without luting, and therefore may eaſily be changed. And if you pleaſe to diſtil any thing elſe, you muſt take away that diſh with a pipe, and make it clean, and then joyn it cloſe again (that no ſpirit may breath forth) to the work of the lower receiver. And if that diſh cannot be ſo cloſely joyned, that nothing exhale, pour in a ſpoonful of water, for that doth aſtringe, neither doth it hurt the ſpirits, becauſe in the rectifying it is ſeparated.

Of Subliming veſſels.

Theſe you need not make of glaſs, or of ſuch earth as may retain the ſpirits, as hath been above mentioned; it is ſufficient if ſo be they be made of good common potters earth and be well glazed within, *viz.* of ſuch a form, and figure, as appears by the annexed delineation.

Yet you muſt chooſe good earth that will endure the fire, for the lower pots are ſo heated by the fire, that they would be broken if they ſhould not be made of good earth.

Now I will ſhew you in general the manner it ſelf of diſtilling; as alſo the manual neceſſaries in every diſtillation.

The manner of diſtilling.

In the firſt place let there be ſome burning coales put in, which afterwards muſt be covered with more until the Furnace be full almoſt to the pipe, which being done let not the uppermoſt cover be laid over its hole (that the heat and ſmoke, may paſs that way, and not thorow the pipe, and receivers which will thereby be red hot; and this will be a hindrance to the diſtillation) untill the fire be ſufficiently kindled and the furnace be throughly hot; then caſt in with an Iron ladle of the water prepared for diſtillation as much as will cover the coales, which being done, ſtop the furnace very cloſe, by preſſing down ſtrongly the upper cover upon its hole, or ſand, which is put in the lower part of the hole being a place made for that purpoſe. Now let him that caſts in any thing thorow the middle hole, preſently ſtop it with a ſtopple of ſtone, and that very cloſe, for by this means all thoſe things which were caſt in, will be forced after the manner of a thick cloud to break forth through the pipe into the receivers, and there to condenſe themſelves into an acid ſpirit, or oyle, and thence to diſtil into the diſh ſet under, through the pipe whereof they do yet diſtil down further into an other glaſs receiver. The Coales being burnt out, and all the ſpirits being come forth, you muſt caſt in more Coales, and more materials, until

mater

untill you have got a ſufficient quantity of Spirits. In this way of diſtilling, you may at your pleaſure ceaſe, and begin again without any danger.

When you will make clean the Furnace, you need do nothing elſe, then draw out the Iron bars that ly on the croſs bar, that the *Caput Mortuum* may fall down, which afterwards may be taken away with a fire ſhovel, which being done you muſt put in the bars again and lay them on the croſs bars as before, upon which you muſt caſt burning coals, and upon them others until there be enough, then on them all being well kindled caſt your materials.

When you go to make clean the receivers, and to begin to diſtil an other thing, you need not remove them, but only pour pure water into them, *viz.* by their upper receiver, by the deſcending whereof the other are purified.

And by this way not only out of vegetables, volatiles, and minerals (incombuſtible) but alſo out of metals fixed, and ſtones, ſpirits, oyles and flowers are drawn forth wonderfully, eaſily, and in good quantity, which otherwiſe could never have been done by the vulgar art of diſtilling.

Now in this furnace are diſtilled only ſuch materials, which being diſtilled yeeld an incombuſtible quantity, as common ſalt, vitrial, allom, and other minerals, & veſſels, each of which doth yet require their peculiar manuals, if operated upon.

Now becauſe this furnace doth not ſerve for every ~~water~~ matter, becauſe the materials to be diſtilled are caſt upon burning coals, which are things combuſtible, I have determined in the ſecond part to give another, *viz.* a leſſer unlike to this, yet convenient to diſtil all combuſtible things that are endued with volatile ſpirits, as Tartar, Hartſhorn, Amber, Salt armoniac, of urine, *&c.* There are by the help hereof made moſt ſubtile, volatil, ſulphureous ſpirits of ſalts, and minerals, as of common ſalt, vitrial, allom, nitre, antimony, and of all other minerals, and metals, which otherwiſe without this furnace could not have been made, with which ſpirits wonderful things are performed in Medicine, and Alchymie, as in the ſecond part ſhall be demonſtrated more largely.

Now I will ſhew you a way to make other receivers belonging to the firſt furnace, and indeed ſuch as are more fit for ſome operations, as the former were more fit then others : wherefore let him that will operate chooſe theſe, or the other, as he pleaſeth.

As therefore the former being erected upwards by a wall, or ladder, by which means the ſpirit might aſcend from one into an other ſo long, untill being refrigerated, and condenſed might again drop downward into the diſh that is annexed thereto : ſo theſe are a contrary way ſet and placed collaterall in a veſſel filled with cold water to condenſe the ſpirits, by which means you need not ſo many receivers ; Alſo they muſt not be faſhioned like the former, as to be open above, and below, but only above like pots that ſerve for boyling : but this you muſt obſerve that by how much the deeper and larger they are, by ſo much the better they are.

Alſo you muſt joyn them together by the help of earthen pipes, being ſo diſtinct, that the ſpirits may be kept back, being yet hot (and not refrigerated) from paſſing out of one into the other, but being forced through the middle of the ſeparation of the pipes may go to the bottom of every receiver, and thence ariſe by another pipe into another receiver that hath a double cover like the former, where again deſcending to the cold bottom, remain refrigerated, and condenſed. Now three or four of theſe are enough (whereas of other thirteen or fifteen are required) a regard being had of their greatneſs.

You may ſee the figure of theſe receivers, as alſo their joyning together by the annexed delineation. Now for the moſt part one is ſufficient for him that diſtils a few things, eſpecially if the ~~water~~ be not pretious, and then let one crooked earthen pipe at leaſt be joyned, one arme with the pipe that goeth forth of the furnace, the other with the receiver, but ſo that it go into the receiver downwards, even to the middle thereof, and then you need not ſhut the orifice of the receivers, for it is no great matter if ſomewhat evaporate, *viz.* if the ~~water~~ to be diſtilled be not pretious, And by this way may new

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new ſpirits, and new flowers be made every houre, with the help of one furnace, and one recipient but with this caution, that for every new diſtillation, the recipient be waſhed with water before it be put to the pipe; which being put to, you may then caſt your ſpecies into the furnace, and this do till you have a ſufficient quantity of ſpirits.

And this way of diſtillation ſerves eſpecially for the trying of the natures and properties of many and divers minerals, ſuch as yeild in the fire ſpirits, and flowers. For it would be too tedious in every new diſtillation to apply a new and diſtinct receiver: as alſo many ſtudious of the Chymical art would quit their ſtudy, being able to make by retort but one tryal in a day. And no wonder if expences, and loſs of time ſhould deter many.

Now here there is no need of many Retorts, nor of laving them, without receivers, and ſuch like ſuperfluous things; neither is there here required the conſtant preſence of the operator, the obſervation of the regiment of fire, the neglect whreof would otherwiſe endanger the loſs of the retorts and receivers, and by conſequence the loſs of labor. Theſe and ſuch like tedious things are not here to be cared for, becauſe it is ſufficient only to caſt the ~~water~~ upon the coals, and cover the furnace, and then preſently go forth the ſpirits, and flowers of the ſame kinde with their mineral: of which when thou haſt got a ſufficient quantity, thou muſt draw out the Iron bars, upon which the coals lye, that they may fall down, and be taken away; and whilſt the furnace is yet hot, to put in the Iron bars again, and upon them to lay freſh coals, which then will of their own accord be kindled with the heat of the furnace. In the mean time you muſt take away the receiver, and make it clean and ſet it to again, or if you had rather put another clean one, *viz.* for the new diſtillation of another ~~water~~. matter

matter

And by this way divers things may be in the ſpace of 1. hour diſtilled, and ſublimed, *viz.* in a ſmall quantity. But he that will diſtil, or ſublime in a greater quantity, let him take three or four pots that the ſpirits may paſs from one into another, that nothing thereof be loſt. Here need not (as I ſaid before) the continual preſence of the operator, for he may be gone, ceaſe, or repeal as he pleaſe, becauſe the work is without danger of breaking the retorts, and receivers.

He that knows the uſe of this furnace may do many things in a ſhort time without ſpending much time or coſt. For any one may do more by the help thereof in one hour, then in the common way in 24. by which way alſo there is a great ſaving of coals, becauſe ten pound of coals will do more this way then a hundred the other. As for example, he that will try ſhall make a pound of ſpirit of ſalt in one hour with 3. 4. or five pounds of coals; whereas after the other way are required fifty or ſixty pounds, and at leaſt twenty or thirty hours time, *viz.* in the common way by the help of retorts: which is indeed very tedious.

Alſo by this way may be made the flowers of minerals, and metals, in a great quantity, very eaſily, and in a ſhort time without great coſt, ſo as that in one hours ſpace with three or four pouud of coals may a pound of the flowers of Antimony be made. And this is no ſmall help to the Phyſitian, and Chymiſt.

Moreover this furnace being once built endures for many yeers, and being broken is eaſily repaired.

And by this way you ſhall need only materials to be diſtilled, no retorts, and receivers are not in danger, by which means much coſt is ſaved.

Beſides the aforeſaid wayes I have yet another, and that more compendious, *viz.* of diſtilling, and ſubliming, and more eaſie, by which means in a very little time, an incredible quantity of ſpirits of ſalts, and flowers of Minerals, and metals may be made: which I ſhall refer till another time becauſe for the preſent I have ſaid enough.

Now I do not doubt but diligent Chymiſts will follow my ſteps, and finde out thoſe things which were unknown to me. *For it is eaſier to adde to things founde out, then to finde out things unknown.*

The conſtruction therefore of the furnaces being in mine opinion cleerly ſhewed, there now follows the manner of diſtilling, and ſubliming with it.

Although haply, and contrary to my hope any obſcurity ſhould be met withall, yet one proceſs will explain another: and the diligent operator, and ſearcher of nature ſhall without doubt by his practiſe attain the effect after the ſame manner as I have preſcribed. And this is that, which together with the bleſsing of God may overtake all pious Chymiſts, Amen.

How the Spirit of Salt is to be diſtilled.

THE reaſon why I enter upon the ſpirit of ſalt, before I ſay any thing of the ſpirits of vegetables, is this, *viz.* becauſe it is even the chiefeſt, which can be made in this furnace: for few exceed this in ſtrength and vertues; wherefore I alſo have given it the preeminency. Neither is there any of the acid ſpirits, about which the Chymiſts hitherto have been more buſied, then this, wherefore alſo it was of all, of greateſt price, &c. For ſome have mixed ſalt with potters clay; and have made this mixture into little bals, which they have for to get the ſpirit, forced by retort into a very ſtrong fire: ſome have mixed ſalt with bole, ſome with the powder of tyles, others with burnt Allume, *&c.*

Others uſing a more compendious way have made ſalt to flow in a retort, which hath a pipe both in the upper, and hinder part; by the upper pipe of which they have dropped in cold water, to elevate the ponderous ſpirits of the ſalt, but by the hinder they have blown with bellows, to force the ſpirits into the retort: and this way is not altogether to be ſlighted, yet it hath this inconveniency, that in proceſs of time the retorts are broken, that they can no longer retain the ſalt, and ſo the diſtillation is intercepted. Some have attempted it with Iron retorts, but by this means the ſpirits have been deaded, becauſe they eaſily ſet upon the Iron, whence in ſtead of ſpirit they have had flegme. And ſuch, and other tedious wayes of diſtilling they have invented; and by the beſt of them indeed they could ſcarce diſtill one pound in 24. or 30. houres ſpace with 50. 60. or 100 pound of coals; this being the reaſon, becauſe the ſalt is very little wrought upon, and therefore it is that few ever had the ſpirit right, and good, whence alſo the vertues thereof have been unknown.

And this therefore I was willing to make known, that it might appeare, what price this ſpirit hath hitherto been of, and how eaſie, and abundantly, and with what little coſt, it may after my new invented way be made.

It is ſaid above,that the materials may in this way of diſtilling be immediately caſt into the fire; yet this muſt be wiſely underſtood. For although ſome of the ſpecies may withont any preparation be immediately caſt into the fire, yet it doth not follow that all and every one of them muſt: for in ſome of them we muſt uſe our diſcretion, as in the diſtilling of ſalt. For if the ſalt be immediately caſt into the fire, it will not only yeeld no ſpirits, but will leap ſo long upon the coals, untill it finde a deſcent to the loweſt part of the furnace: Now this may be prevented divers wayes; and firſt indeed after this manner: Diſſolve ſalt in common water, then quench burning coales in this water, that they may be impregnated with the ſalt, which afterwards ſet on fire in the furnace: but you muſt firſt caſt in other burning coals, upon which you muſt caſt thoſe that are impregnated with ſalt untill the furnace be full, as is above ſaid: and whiles the coales burn the the ſalt is reſolved by the force of the fire into ſpirit.

Now you muſt obſerve that he that diſtils ſpirit of ſalt after this manner muſt make choice of glaſs receivers, becauſe the ſpirit whileſt it is hot, penetrates by reaſon of its wonderful ſubtilty, thoſe that are earthen. And this ſpirit is of a moſt grateful taſt. But in defect of glaſs receivers, I ſhall ſhew you another way, wherein you may uſe thoſe that be of earth.

Mix ſalt,and vitrial or allome together,grinding them very wel in a morter (for by how much the better they are ground the more ſpirit they yeeld.) Then caſt this mixture into the fire with an Iron ladle, *viz.* ſo much of it as will be ſufficient,

ent to cover the coals, and then with a great fire the ſpirits come forth into the receivers, where being coagulated, they diſtill down into a diſh, and thence into another receiver. And if thou knoweſt how to work aright, the ſpirits will like water continually run out through the pipe the thickneſs of a ſtraw; and thou mayeſt eaſily every hour make a pound of the ſpirit. Now the reaſon why thou ſhalt by this way have more ſpirits then by the other, is this, *viz.* becauſe the vitriol, and allome which is mixed with the ſalt, makes it flow quickly, by which means it is prevented from falling down through the coals to the lower part of the furnace, but ſticking to the coals is almoſt all of it turned into ſpirits. The *Caput Mortuum*, which is reddiſh, eaſily fals with the aſhes through the grate, and can no more be diſtilled, but yeelds by excoction a white fixed ſalt, which ſerves for the flowing of metals; and being diſſolved in warm water ſerves alſo for a glyſter againſt the worms, which it kils, and purgeth alſo the bowels.

Thou wilt object, that the ſpirit made after this maner is not the true ſpirit of ſalt by reaſon of the mixture of vitriall and allome, but mixed, and compounded. I anſwer; There can by this way diſtill no ſpirit of vitrioll, and allome, being that which I often tryed, caſting vitriol, or allome into the furnace, where I received no ſpirit at all; the reaſon of this is, becauſe theſe ſpirits are far more heavy then the ſpirit of ſalt, neither can they aſcend ſo great a height, *viz.* of three ſpans, but are burnt, whence unleſs the flegme, nothing diſtils. Wherefore the ſpirit of ſalt that is made after this manner is not mixed, but pure and meer ſpirit of ſalt, of the ſame taſt, and vertue as that is of, that is ~~made~~ by it ſelf; becauſe in this furnace the ſpirit of allome, and vitriol cannot be made unleſs a pipe go out of the furnace neer the grate, as you may ſee by the delineation of the furnace, for otherwiſe it cannot be made; beſides, theſe ſpirits are better, and more truly taught in the ſecond part. And if it be granted that ſomewhat together with the ſpirit of ſalt come forth (which is yet impoſſible) what hurt I pray you comes from thence either in the ſolution of metals, or medicine? wherefore the ſpirit made after this way is not to be ſuſpected. Yet I will ſatisfie the incredulous, and will ſhew him another way without the addition of allom, or vitrial, for the diſtilling of that ſpirit, but that will be in the ſecond part of this book, where I will teach you the furnace by which is made ſpirit of nitre, Aqua foris, and amongſt combuſtibles; the oyles of vegetables, and fats of animals and other things which cannot be made by this: and by this way I will ſatisfie thoſe, who are not pleaſed with the former.

Now for want of glaſs receivers we are forced to uſe earthen, but theſe cannot retain the ſpirit of ſalt made after the aforeſaid wayes: in which caſe I could indeed diſcover a certain little manual, by vertue of which the aforeſaid ſpirit may be received even in a great quantity in earthen recipients: but forc ertain cauſes I ſhall here be ſilent, and ſhal refer it till the edition of the ſecond part. Let it ſuffice therefore that I mentioned ſuch a thing, wherefore omitting that, I ſhall proceed to ſhew you the vertues, and uſe of this ſpirit, as well in Alchymie, as in medicine, & other Mechanical arts.

Of the uſe of the ſpirit of Salt.

IT is worth while to ſpeak of the power, and vertues of this excellent ſpirit; what other authors have cleerly deſcribed, I ſhall here paſs over, and refer the reader to the writings of thoſe Authors; touching only on ſome few of which they ſaid nothing.

The Spirit of ſalt is by moſt accounted a moſt excellent medicine, and ſafely to be uſed as well inwardly, as outwardly: It extinguiſheth a preternatural thirſt in hot diſeaſes, abſtergeth, and conſumeth flegmatique humors in the ſtomack, exciteth the appetite, is good for them that are hydropical, have the ſtone, and gout, *&c.* It is a menſtruum diſſolving metals, excelling all other therein: For it diſſolveth all metals and minerals (excepting ſilver) and almoſt all ſtones (being rightly prepared) and reduceth them into excellent medicaments.

It doth alſo many excellent things in mechanicall arts.

Neither is it to ſlighted in the kitchen, for with the help thereof are prepared divers pleaſant meats for the ſick as well as for thoſe that are in health, yea and better then with vinegar, and other acid things: and it doth more in a ſmall quantity, then vinegar in a great. But eſpecially it ſerves for thoſe countreys that have no vinegar. It is uſed alſo inſtead of verjuice and the juce of Lymons. For being prepared after this way, it is bought at a cheaper rate then vinegar or juice of Lymons. Neither is it corruptible as expreſſed juices are, but is bettered by age. Being mixed with Sugar it is an excellent ſauce for roſt meat. It preſerves aſo divers kinds of fruits for many yeers. It makes alſo raiſins, and dryed grapes to ſwell, ſo as to acquire their former magnitude again, which are good to refreſh a weak ſtomach in many diſeaſes, and ſerves for the preparing of divers kinds of meats of fleſh and fiſh; but you muſt mix ſome water with the ſpirit, or elſe the raiſins will contract too much acidity. This ſpirit doth eſpecially ſerve for making meats delightfully acid; for whatſoever things are prepared with it, as Chickens, Pigeons, Veale, *&c.* are of a more pleaſant taſt then thoſe which are prepared wirh vinegar. Beefe being macerated with it becomes in a few dayes ſo tender, as if it had been a long time macerated with vinegar. Such, and many more things can the ſpirit of ſalt do.

A diſtillation of vegetable oyles, whereby a greater quantity is acquired, then by that common way, by a gourd ſtill.

AS many diſtillers as hitherto have been, have bin ignorant of a better way to diſtill oyles of ſpices, woods, and ſeeds, then by a gourd ſtill, or alembick, with a great quantity of water. And although they may alſo be made by retort, yet there is a great deal of care required, or elſe they contract an *Empyreuma*; wherefore that way by a ſtill is alwayes accounted the better, which way indeed is not to be ſlighted if you diſtill vegetables of a low price, and ſuch as be oleaginous;

but not ſo in the diſtillation of ſpices, and of other things that are of a greater value, as are Cinnamon, Mace, Saffron, &c. which cannot be diſtilled in a gourd ſtill without loſs, becauſe then there is required a great quantity of water, and by conſequence great, and large veſſels, to which ſomething adheres, wherefore we loſe almoſt half, which is not to be ſo much valued in vegetables that are oleaginous, as in anniſſeed, fennel, and caryoway ſeed, &c. But the loſs made in the diſtilling of dryer and dearer vegetables, as of Cinnamon, *Lignum Rhodii*, *Caſſia*, is evident enough, and by conſequence not to be ſlighted. Neither can it be, that all things can be diſtilled that way, for a good quantity by coction acquireth a gummy tenaciouſneſs, which cannot aſcend with the water. But that this way for the future be prevented, I will ſhew another way to diſtill the oyles of ſpices, and other pretious things, which is done with ſpirit of ſalt, whereby all the oyle is drawn forth without any loſs, the proceſs whereof is this, *viz.* Fill a gourd with cinnamon or any other wood, or ſeed, upon which pour ſo much of the ſpirit of ſalt, as will be ſufficient to cover the wood, then place it with its Alembick in ſand, and give it fire by degrees that the ſpirit of ſalt may boyle, and all the oyle will deſtill off with a little flegme, for the ſpirit of ſalt doth with its acrimony penetrate the wood, and freeth the oyle that it may diſtil off the better and eaſier. And by this way the oyle is not loſt by the addition of that great quantity of water in thoſe great, and large veſſels, but is drawn in leſſer glaſs veſſels with the addition of a little moyſture. Diſtillation being finiſhed the ſpirit is poured off by inclination from the wood, being again uſeful for the ſame work. And if it hath contracted any impurity from the wood, it may be rectified: but the reſidue of the ſpirit which remains in the wood ye may recover, if that wood be caſt into the aforeſaid furnace upon burning coals, by which means it may come forth again pure, and clear: and by this means we loſe none of the ſpirit of ſalt. And after this way by help of the ſpirit of ſalt are drawn forth oyles of dearer vegetables together with their fruit which cannot be done by a ſtill.

There are made alſo by means thereof oyles of gummes and roſins, cleer, and proſpicuous.

The cleer oyle of Maſtick, and frankincenſe.

TAke of frankincenſe, or maſtick powdered ſmall as much as will ſerve to fill the third part of a cornute (which muſt be coated) upon which pour a ſufficient quantity of the ſpirit of ſalt, taking heed that the retort be not filled too full, or elſe the ſpirit when it boyles, flows over it, then place it in ſand, and give fire by degrees, and there will firſt come out ſome phlegme, after which a clear tranſparent oyle together with the ſpirit of ſalt, which muſt be kept by it ſelf, after this a certain yellow oyle which muſt be received by it ſelf: and laſt of all there follows a red oyle, which although it is not to be caſt away, yet it is very unlike to the firſt, ſerving for outward uſes, and to be mixed with oyntments and Emplaſters, for it doth wonderfully conſolidate, and therefore good in new and old wounds. The firſt being well rectified is in its ſubtilty, and penetrating faculty not unlike to ſpirit of wine, and may profitably be uſed inwardly, and outwardly, *viz.* in cold affects, but eſpecially in the ſtiffneſs of the Nerves cauſed by cold humors, upon which follows a contraction; but then you muſt firſt rub the member contracted with a linnen cloth, that it may be well warmed, into which then the oyle muſt be chafed with a warm hand. For it doth do wonders in ſuch like affects of the Nerves.

After the ſame maner may oyles be made out of all gums. The red, tenacious, and ſtinking oyles of Tartar, Hartſhorn, Amber, &c. diſtilled after the common way by retort are alſo rectified with ſpirit of ſalt ſo as to become tranſparent and to loſe the *Empyreuma* contracted by diſtillation.

Now the cauſe of the blackneſs, and fetidneſs of theſe kind of oyles is a certain volatile ſalt which is to be found as well in vegetables, as certain Animals, which is eaſily mixed with the oyle,and then makes it of a brown colour.For every volatile ſalt whether it be of Urine, Tartar, Amber, Hartſhorn, and of other vegetables, and Animals, is of this condition, and nature as to exalt, and alter the colours of ſulphureous things,and that either for the worſe,or for the better: but for the moſt part it makes oyles thick, black and ſtinking, as you may ſee in Amber,Hartſhorn, and Tartar. The cauſe therefore of the blackneſs,and fetidneſs of theſe oyles being known we may the more eaſily take heed thereof in diſtilling,and being contracted, correct them again by the help of ſpirit of ſalt. For all volatile ſalt hath contrariety to any acid ſpirit, and on the other ſide,every acid ſpirit hath a contrariety with all volatile ſalts, that have the nature of ſalt of Tartar. For metals that are diſſolved with acid ſpirits are as well precipitated with ſpirit of urine or any volatile ſalt as with the liquor of ſalt of Tartar; which ſhall be more at large declared in the ſecond part.

The volatile ſalt therefore is by the mortifying acid ſpirits, as of ſalt,vitrial, allom, vinegar,*&c.* deprived of its volatility, and is fixed, by which means being debilitated it forſakes its aſſociate which was infected with blackneſs by it: it is neceſſary that we ſhould proceed after the ſame maner with theſe fetid oyles, *viz.* as follows.

Take any fetid oyle of Tartar, Amber,*&c.* with which fill the fourth part only of a glaſs cornute, and upon it poure by drops the ſpirit of ſalt; and it will begin to be hot, as it is uſed to be, when Aqua fortis is poured on ſalt of Tartar; wherefore the ſpirit is to be poured on it by little and little, and by drops for fear of breaking the glaſſe: Now the ſigne of the moriification of the volatile ſalt is when it ceaſeth to make a noiſe, and then no more is to be poured on, but ſet your retort in ſand, and give fire to it by degrees, as is uſed to be done in the rectifying of things of eaſie elevation: and firſt of all will go forth a certain ſtinking water, after which comes a tranſparent clear, and odoriferous oyle,and after that a certain yellow, clear, and alſo well ſmelling oyle, but not ſo as the firſt, wherefore each muſt be taken a part by changing

ging the receivers. Now theſe oyles become more grateful then thoſe fetid of the ſhops. For theſe oyles retaine their cleerneſs, and fairneſs, the cauſe of their fetidneſs, and redneſs being taken away by the ſpirit of ſalt. In the bottom of the retort remains the black volatile ſalt with the ſpirit of ſalt, from whence it may be ſublimed into an odoriferous ſalt, reſembling ſalt armoniack in taſt. The ſpirit of ſalt is alſo deprived of its acidity, and coagulated by the volatile ſalt, and is like *tartarum vitriolatum*, appointed alſo for its uſes, as ſhall be ſpoken in the ſecond part of the ſpirit of urine.

After the ſame manner alſo are rectified other oyles, which by length of time have contracted a clammineſs, as are oyle of Cinnamon, Mace, cloves,&c. with the ſpirit of ſalt, if they be rectified by retort, for then they acquire again both the ſame clearneſs, and goodneſs, as they had when they were newly diſtilled.

Here I muſt make mention of a certain error of Phyſitians, not only of ignorant Galeniſts, but Spagyricks, committed in the preparations of ſome Chymical medicaments. For many have perſwaded themſelves that oyle of Tartar, Hartshorn,&c. having loſt its ſtink, is a medicine radically taking away all obſtructions; but this muſt be taken with a graine of ſalt. For ſome have rectified theſe kinds of oyles by calcined vitriol, and by that means have ſomewhat made them loſe their *Empyreuma*, but withall their vertues: which others obſerving have conceived that the fetidneſs thereof is not to be taken away, becauſe the vertue of them is thereby loſt, as if the vertue conſiſted in the fetidneſs thereof; but that is a very great error, becauſe fetidneſs is an enemy to the heart and brain, and in it is no good. But this is granted, that they that take away the fetidneſs of thoſe oyles mortifie the vertues of them. But thou ſaiſt, How then muſt we proceed in taking away their fetidneſs without the loſs of the vertues? Muſt they be rectified by the ſpirit of ſalt? as even now thou taughteſt. R. No, for although I ſaid that oyles might be clarified with ſpirit of ſalt, yet it doth not follow that my meaning was that that clarification was the mending of them: this is only a way of clarification, whereby they become more gratefull; and it is not to be ſlighted, a better being unknown. But how they are to be rectified from their fetidneſs, and blackneſs without the loſs of their vertues, and to be made more noble, doth not belong to this place, becauſe it cannot be done by this furnace: I ſhall refer the reader therefore to the ſecond part, where it ſhall be ſhewed, how ſuch ſpirits are to be rectified without the loſs of their vertues, which being ſo prepared may well be accounted for the fourth pillar of Phyſick. And theſe things I was willing at leaſt for information ſake to ſhew you, not to offend you, and that becauſe I was moved with pity, and compaſſion towards my neighbor.

The Quinteſſence of all vegetables.

POur upon ſpices, ſeeds, woods, roots, fruits, flowers, *&c.* the ſpirit of wine well rectified, place them in digeſtion to be extracted, untill all the eſſence be extracted, with the ſpirit of wine; then upon this ſpirit of wine being impregnated pour the beſt ſpirit of ſalt, and being thus mixed together place them in Balneo to digeſt, untill the oyle be ſeparated and ſwim above from the ſpirit of wine, then ſeparate it with a ſeparating glaſs: or diſtill off the ſpirit of wine in Balneo, and a cleer oyle will aſcend: for if the ſpirit of wine be not abſtracted, then that oyle will be as red as blood; and it is the true quinteſſence of that vegetable, from whence by the ſpirit of wine it was extracted.

The Quinteſſence of all Metals, and Minerals.

DIſſolve any metal (excepting ſilver, which muſt be diſſolved in Aqua fortis) in the ſtrongeſt ſpirit of ſalt, and draw off the flegme in Balneo: to that which remaines pour the beſt rectified ſpirit of wine, put it to digeſting, untill the oyle be elevated to the top as red as blood, which is the tincture, and quinteſſence of that metal, being a moſt pretious treaſure in medicine.

A ſweet, and red oyle of metals and minerals.

Diſſolve a metal, or Mineral in ſpirit of ſalt, diſſolve alſo an equall weight of ſalt of wine eſſentificated; mix theſe diſſolutions, and diſtill them by retort in a gradual heat, and there will come out an oyle ſweet, and as red as blood together with the ſpirit of ſalt: and ſometimes the neck of the retort, and receiver will be coloured like a Peacocks taile with divers colours, and ſometimes with a golden colour.

And becauſe I would without any difference comprehend all metals and minerals under one certain general proceſs; let him that would make the eſſence of ſilver take the ſpirit of nitre, and proceed in all things as was ſpoken of the other metals. Concerning the uſe of theſe eſſences, I need not ſpeak much thereof; for to him that knows the preparation ſhall be diſcovered the uſe thereof. Concerning the corroſive oyles of metals and minerals, ſeeing they cannot be deſcribed by any one proceſs, it will be worth while to ſet down what is peculiar to each of them, as followeth.

The oyle, or liquor of Gold.

Diſſolve the calx of gold in the ſpirit of wine (which muſt be very ſtrong, or elſe it cannot diſſolve it) but in defect of the ſtrongeſt ſpirit thereof mix a little of the pureſt ſalt-peter; but that oyle is the beſt which is made with the ſpirit of ſalt alone. From the gold diſſolved abſtract half the ſolution, and there will remaine a corroſive oyle, upon which pour the expreſſed juice of limons, and the diſſolution will become green, and a few feces fall to the bottom, which may be reduceed in melting. This being done put this green liquor in Balneo and draw off the flegme: that which remains take out, and put upon a marble in a cold moiſt place, and it will be reſolved into a red oyle, which may ſafely, and without danger be taken inwardly, curing thoſe that are hurt with Mercury. But eſpecially it is commended in old ulcers of the mouth, tongue, and throat, ariſing from the French pox, leprouſie, ſcorbute, *&c.* where the oyle of other things cannot be ſo ſafely uſed. There is not a better medicine in the exulceration, and humors of the glandules, in the ulcers of tongue and jaws, which doth ſooner mundifie, and conſolidate. Neither yet muſt we neglect neceſſary purgings, and ſudorifickes for fear of a relapſe, the cauſe not being taken away.

Neither will there any danger follow, whether it be given inwardly, or uſed outwardly, as in the accuſtomed uſe of other medicaments, and gargariſmes; for it may dayly, and truly without all danger be uſed at leaſt three times with a wonderful admiration of a quicke operation.

Oyle of Mars.

DIſſolve thin plates of Iron in rectified ſpirit of ſalt, take the ſolution, which is green, of a ſweet taſt, and ſmelling like fetid ſulphur; & filter it from that filthy and feculent reſidence: then in a glaſs gourd in ſand abſtract all the humidity (*viz.* with a gentle fire) which will be as inſipid as rainwater, becauſe the iron by reaſon of its dryneſs hath attracted all the acidity to it ſelf: but in the bottom will remain a maſſe as red as blood, burning the tongue like fire: It takes away all proud fleſh of wounds, and that without all danger. It is to be kept in a glaſſe cloſe ſtopt from the aire, leſt it be reſolved into an oyle, which will be of a yellow colour. But he that deſires to have the oyle may ſet it on a marble in a moiſt Cellar, and within a day it will be reſolved into an oyle which will be in colour betwixt yellow and red: It is a moſt excellent ſecret in all corroding ulcers, fiſtula's, cancer, *&c.* being an incomparable conſolidator, and mundifier. And it is not without profit mixed alſo with common water to waſh the moiſt, fetid ulcers of the leggs, which cauſe humors, by being applyed warm like a bath, for it dryes, and heales ſuddenly, if withal Purges be adminiſtred. It cures alſo any ſcab. That red maſſe (being yet unreſolved) being put on the oyle of ſand, or flints (of which in the ſecond part) makes a tree to grow in the ſpace of one or two hours, having root, trunk, and boughs: which being taken out, and dryed in the teſt yeelds good gold, which that tree extracts from the earth, *i.e.* from the flints, or ſand. Thou maiſt if thou pleaſeſt, more accurately examine this matter.

Oyle of Venus.

SPirit of Salt doth not eaſily work upon Copper, unleſs it be firſt reduced into a calx, and that after this manner. Take plates of Copper made red hot in an open crucible, quench them in cold water, & they will cleave into red ſcales: then the remainders of the plates make red hot, & quench as before: do this ſo often till thou haſt got a ſufficient quantity of the calx; which being dryed, and poudered extract with the rectified ſpirit of ſalt, in ſand, untill the ſpirit of ſalt be ſufficiently coloured with a green timcture, which you muſt decant, and filter, and then abſtract from it the ſuperfluous moiſture, that there may remain a green thick oyle, which is an excellent remedy for ulcers, eſpecially ſuch are venereal, being applyed outwardly.

Oyle of Jupiter *and* Saturne.

NEither are theſe two metals eaſily diſſolved in the ſpirit of ſalt, yet being filed are diſſolved in the beſt rectified ſpirit of ſalt. But the operation is performed better with the flowers of theſe metals (the preparation whereof ſhall be hereafter taught) Take therefore the flowers, upon which in a gourd glaſs pour the ſpirit of ſalt, and preſently the ſpirit will work upon them, eſpecially being ſet in a warm place; filter the yellow ſolution, and abſtract the humidity untill there remain a yellow heavy oyle, which is proper against putrid ulcers.

Oyle of Mercury.

NEither is this eaſily diſſolved with the ſpirit of ſalt: but being ſublimed with vitriol, and ſalt is eaſily diſſolved. Being diſſolved it yeelds an oyle very corroſive which muſt be uſed with diſcretion, wherefore it is not to be adminiſtred unleſs it be where none of the other are to be had. For I ſaw a woman ſuddenly killed with this oyle, being applyed by a certain Chirurgeon. But this oyle is not to be ſlighted in eating ulcers, tetter, &c. which are mortified by it.

Oyle of Antimony.

CRude Antimony that hath never undergone the fire, is hardly diſſolved in ſpirit of ſalt: as alſo the *Regulus* thereof; but the *Regulus* being ſubtilly poudered is more eaſily wrought upon in caſe the ſpirit be ſufficiently rectified.

The *Vitrum* is more eaſily, but moſt eaſily of all the flowers are diſſolved, being ſuch as are made after our preſcription a little after ſet down. Neither is *Butyrum Antimonii* (being made out of ſublimed Mercury, and Antimony) any thing elſe but the *Regulus* of Antimony diſſolved with ſpirit of ſalt: for ſublimed Mercury being mixed with Antimony, feeling the heat of the fire, is forſaken by the corroſive ſpirits aſſociating themſelves with antimony, whence comes the thick oyle: whileſt which is done the ſulphur of Antimony is joyned to the quick-ſilver, and yeelds a Cinnabar, ſticking to the neck of the retort; but the reſidue of the Mercury remains in the bottom with the *Caput Mortuum*, becauſe a little part thereof doth diſtill off: And if thou haſt skill thou maiſt recover the whole weight of the Mercury again.

And theſe things I was willing the rather to ſhew thee becauſe many think this is the oyle of Mercury, and therefore that white pouder made thence by the pouring on of abundance of water they call *Mercurius vitæ*, with which there is no mixture at all of Mercury, for it is meer Regulus of Antimony diſſolved with ſpirit of ſalt, which is again ſeparated, when the water is poured on the antimoniall butter; as is ſeen by experience: For that white pouder being dryed, and melted in a crucible yeelds partly a yellow glaſs, and partly alſo a Regulus, but no Mercury at all.

Whence it doth neceſſarily follow that that thick oyle is nothing elſe but Antimony diſſolved in ſpirit of ſalt. For the flowers of Antimony being mixed with ſpirit of ſalt make an oyle in all reſpects like to that butter which is made of Antimony, and ſublimated Mercury; which alſo is after the ſame manner by the affuſion of a good quantity of water precipitated into a white pouder, which is commonly called *Mercurius vitæ*: It is alſo by the ſame way turned into *Bezoardicum minerall*, viz. by abſtracting the ſpirit of nitre, and it is nothing elſe but Diaphoretick Antimony.

For it is all one whether that Diaphoretick be made with ſpirit of nitre, or with nitre it ſelf, *viz.* corporeal, for theſe have the ſame vertues, although ſome are of opinion that that is to be preferred before the other: but the truth is, there is no difference. But let every one be free in his own judgement, for thoſe things which I have wrote, I have not writ out of ambition, but to finde out the truth.

Now again to our purpoſe, which is to ſhew an oyle of antimony made with the ſpirit of ſalt.

Take a pound of the flowers of Antimony (of which a little after) upon which pour two pound of the beſt rectified ſpirit, mix them well together in a glaſs, and ſet them in ſand a day, and night to diſſolve, then pour out that ſolution together with the flowers into a retort that is coated, which ſet in ſand, and firſt give a gentle fire, untill the flegme be come off, then follows a weak ſpirit with a little ſtronger fire, for the ſtronger ſpirits remaine in the bottom with the Antimony: then give a ſtronger fire, and there will come forth an oyle like to the butter of Antimony made with ſublimed Mercury, and is appropriated to the ſame uſes, as follows.

The flowers of Antimony white and vomitive.

TAke of this butter as much as you pleaſe, upon which in a glaſs gourd, or any other large glaſs pour a great quantity of water until the white flowers will precipitate no more; then decant off the water from the flowers, which edulcorate with warm water, and dry with a gentle heat, and thou ſhalt have a white pouder.

The Doſe is, that 1. 2. 3. 8. 10. grains be macerated for the ſpace of a night in wine, which is to be drank in the morning, and it worketh upward, and downward. But it is not to be given to children, thoſe that be old, and weak, but to thoſe that be ſtrong, and accuſtomed to vomiting. When at any time this infuſion is taken and doth not work, as ſometimes it fals out, but makes the patient very ſick, he muſt provoke vomiting with his finger, or elſe it will not work but make thoſe that have taken it to be ſick, and debilitated even to death. We muſt alſo in the over much working of theſe flowers drink a draught of warm beer or rather of warm water, decocted with chervil, or parſly, and they will work more mildly. But let not him that is able to bear the operation thereof any way hinder it, for there is the greater hope of recovering his health thereby, for they do excellently purge choler, and evacuate flegme in the ſtomack, being humors that will not yeeld to other Catharticks; they open obſtructions, reſiſt the putrefaction of the blood, the cauſes of many diſeaſes, ſuch as are feavers, headaches, *&c.* they are good for them that are leprous, ſcorbutical, Melancholical, hypochondriacal, infected with the French pox, and in the beginning of the plague. In brief, they do work gallantly, and do many things.

After the taking of them the patient muſt ſtay in his bed or at leaſt not go forth of his houſe for to avoid the aire, or otherwiſe they may be miſtruſted.

And becauſe of their violence they are feared, and hated, I ſhall in the fourth part of this book for the ſake of the ſick ſet down ſuch as are milder, and ſafer, ſuch as ſhall work rather downward then upward, cauſing eaſie vomits, which alſo thou mayeſt give to children, and thoſe that are old without danger, yet ſome reſpect being had of the diſeaſe, and age.

The flowers of Antimony, diaphoretical.

THE foreſaid flowers if they be caſt into melted nitre, and be left a while in melting, are made fixt, ſo as to become Diaphoretical, and loſe their Cathartical vertue. The acid water being ſeparated from the flowers, if it be evaporated, leaves behinde the beſt ſpirit of ſalt, ſerving for the ſame, or ſuch like uſes again.

Of the external uſe of the Corroſive oyle of Antimony.

THis oyle hath been long uſed by Chirurgions, for they have with a feather applyed it to wounds almoſt uncurable, to ſeparate impurities, for the acceleration of the cure that after other medicaments being applyed may the better operate. But it is better if it be mixed with ſpirit of ſalt, for they are eaſily mixed, and it is made more mild thereby, and the too great corroſive faculty thereof is mitigated. Neither is there any other beſide the ſpirit of ſalt, with which this oyle can be mixed, unleſs it be the ſtrongeſt ſpirit of nitre, for the weak ſpirit of Antimony precipitates the butter of Antimony, as you may ſee in the preparation of *Bezoardicum Minerale.* But the ſtrongeſt ſpirit of nitre diſſolving this butter, makes a red ſolution of wonderful vertue in Chymiſtry, of which we are not to treat in this place; and if this be drawn off again by diſtillation, it leaves behinde the firſt time a fixed Antimony, and Diaphoreticall, which otherwiſe muſt be drawn off twice, or thrice, *viz.* if it be weak, and not able to diſſolve the butter without precipitation.

Now this *Bezoardicum*, is the beſt, and ſafeſt Diaphoretick in all diſeaſes that require ſweat, as in the plague, french pox, feavers, ſcorbute, leproſie, *&c.* if it be given from 6. 8. 10. to twenty grains in proper vehicles; it penetrates the whole body, and evacuates all evil humors by ſweat and urine.

The Oyle of Arſenic *and* Auripigmentum.

AS the ſpirit of ſalt doth not eaſily work upon Antimony by reaſon of the abundance of crude ſulphur, unleſs it be reduced into flowers, in the preparation whereof ſome part of its ſulphur is burnt; ſo alſo Arſenic and *Auripigmentum* are hardly diſſolved with ſpirit of ſalt, unleſs they be reduced into flowers, and the ſpirit of ſalt be very ſtrong, which may be able to work upon it. Theſe may be diſtilled by retort like Antimony into a thick heavy oyle; which being uſed in cancrous eating ulcers exceeds that of Antimony in mortifying, mundifying and purging thoſe evils. After the ſame manner may corroſive oyles be made out of all the realgars being ordained for outward uſes.

Oyle of Lapis Calaminaris.

TAke of the beſt yellow or red *Lapis Calaminaris* very ſubtilly poudered, as much as you pleaſe, and pour upon it five or ſix times as much of rectified ſpirit of ſalt, mix and ſtir them well together, and do not leave them long unſtirred, but ever and anon ſhake the glaſs with the materials; and this do oftentimes, or elſe the *Lapis calaminaris* will grow together into a very hard ſtone, which can be diſſolved no more, which is prevented by the aforeſaid often ſhaking: and when the ſpirit of ſalt will diſſolve no more thereof in *frigido*, ſet the glaſs in warm ſand ſo long untill the ſpirit be tinged with a moſt yellow colour, which then decant, and pour on freſh and again ſet it in digeſtion to extract, and do not forget to ſhake the glaſs often. The ſolution being finiſhed filter it, and caſt away the reſidue of the *terra mortua.* Afterwards ſet the ſolution in ſand, and give fire, and almoſt three parts of the ſpirit of ſalt will go over inſipid, which is nothing but the flegme, although the ſpirit was never ſo well rectified; the reaſon whereof is the moſt dry nature of *lapis calaminaris*, to which the ſpirit of ſalt is very friendly, and therefore very hard to be ſeparated from it. For I never knew any mineral or metal (beſide *Zinck*) which exceeds *lapis calaminaris* in dryneſs. At laſt when no more flegm will go over, let all things coole; which being done, take out the glaſs, and thou ſhalt finde a thick red oyle, as fat as oyle olive, and not very corroſive; for that ſpirit of ſalt being almoſt mortified with *lapis calaminaris* is deprived of its acidity. This oyle is to be kept from the aire; or elſe within a few dayes it attracts much aire which it converts into water, and thereby becomes weakened.

This oyle is of wonderful vertue, being uſed as well inwardly as outwardly. And I wonder that in ſo long a time there hath been no body, who hath operated in *lapis calaminaris* & deſcribed the nature thereof, ſeeing it hath in it a golden ſulphur (of which thing in the fourth part) for if the terreſtreity thereof were ſeparated from it artificially, pure gold would be manifeſted therein; now the greateſt part thereof is volatile, and immature, and cannot eaſily be reduced into a body in melting, wherefore hitherto that ſtone hath not been eſteemed of by Chymiſts, but to the wiſe was alwayes pretious, *&c.*

The uſe of the oyle of Lapis Calaminaris.

IF it be given from 1. 2. 3. drops to ten and fifteen with ſutable vehicles, it purgeth the dropſie, leproſie, gout, and other noxious fixed humors not yeelding to vegetable Cathartícks, of which more at large in the ſecond part of the ſpirit of urine and ſalt of tartar. It ſerves outwardly for an excellent vulnerary balſome, the like to which can ſcarce be ſhewed, not only in reducing old corrupt wounds, but alſo in thoſe that are green, for it doth powerfully dry, mundifie, and conſolidate.

It is alſo uſed in houſhold affaires, for birdlime being diſſolved in it yeelds a certain tenacious matter ſerving to catch birds, mice, *&c.* about the houſe or in the field. For it is as permanent in the heat of the Sun, as in the cold of winter, wherefore it may be uſed at any time of the yeere; all ſmall animals ſtick to it if they do but touch the matter.

A ligature or ſtring ſmeered therewith, and bound about any tree prevents the ſpiders from climbing up thereon, and other kindes of inſects that are noxious to the fruit; a thing worth taking notice of.

This oyle is not by the pouring on of water corrupted, neither is it precipitated, as that of Antimony: wherefore it is uſeful for many things. Common yellow ſulphur boyled in it, *viz.* in a ſtrong fire, ſo as to be diſſolved in it, ſwims upon it like fat, is thereby purified and made as tranſparent as yellow pellucid glaſs, and a better medicine then thoſe common flowers of ſulphur: it ſerves alſo for other uſes, all which to relate here it would be too tedious.

This oyle being mixed with clean ſand, and diſtilled by retort in a fire that is very ſtrong (otherwiſe the ſpirit of ſalt will leave the *lapis calaminaris*) yeelds a moſt fiery ſpirit, the *lapis calaminaris* remaining in the bottome of the retort.

This ſpirit is ſo ſtrong, that it can ſcarce be kept; it diſſolves all metals, and all minerals (excepting ſilver & ſulphur) wherefore by the help thereof many excellent medicaments are made, which cannot be made with the common ſpirit though never ſo well rectified, which although it be often rectified, yet is not without flegme, which cannot be ſeparated from it by the power of rectification, ſo well as with *lapis calaminaris.*

This ſpirit doth perform many things in medicine, as in Alchymie, as alſo in other arts, as you may eaſily conjecture, but here is not opportunity to ſpeak more of theſe things, yet for the ſake of the ſick I ſhall add one thing, to which few things are to be compared, the plaine and ſhort proceſs whereof I would not have thee be offended at. And it is this, *viz.* Mix this ſpirit with the beſt rectified ſpirit of wine, digeſt this mixture ſomewhile, and the ſpirit of ſalt will ſeparate the ſpirit of wine, and will make the oyle of wine ſwim on the top, the volatile ſalt being mortified: and this oyle is a moſt incomparable cordial, eſpecially if with the ſaid ſpirit of wine ſpices have firſt been extracted, and with the ſaid ſpirit of ſalt, gold hath been diſſolved. For then in the digeſtion of this mixture, the oyle of wine being ſeparated attracts the eſſence of the cordial ſpecies, and of other vegetables, being extracted before with the ſpirit of wine, as alſo the tincture of gold, and ſo by conſequence a moſt efficacious imcomparable and univerſal medicine for all diſeaſes, fortifying the *Humidum radicale*, that it way be able [to overcome its enemies; for which let praiſe and glory be given to the immortall God for ever who hath revealed to us ſo great ſecrets.

Of the extrinſecal uſe of the ſpirit of ſalt in the kitchen.

I Said before that in ſtead of vinegar, and verjuice it may be uſed, as alſo in ſtead of the juice of Limons, now it remains that I ſhew you how it is to be uſed, and that indeed as wil for the ſake of the healthy as the ſick.

Let him therefore that will dreſs a pullet, pigeons, veale, &c. in the firſt place put a ſufficient quantity of ſpices, of water, and butter, and then as he pleaſeth a greater, or leſſer quantity of ſpirit of ſalt; and by this means fleſhes are ſooner made ready being boyled, then that common way; an old hen though the fleſh thereof be old is made as tender as a chicken by the addition of this ſpirit: but he that will uſe it in ſtead of the juice of Limons with roſt meat, muſt put into it the pill of limons for preſervation ſake, becauſe it preſerves it. It is uſed in ſtead of verjuice by it ſelf alone, or mixed with a little ſugar, if it be too acid.

He that will ſtew beef, and make it as tender as kid, muſt firſt diſſolve it in tartar and a little ſalt before he wets the fleſh therewith, and the fleſh will not only be preſerved but made tender thereby: but to keep fleſh a long time you muſt mix ſome water therewith, and with weights preſs down the fleſh, that it may be covered with the pickle: for by this means fleſh may be preſerved a great while.

After the ſame manner may all kinds of garden fruits be preſerved, as cucumbers, purſlaine, fennel, broom, German capers, *&c.* and indeed better then in vinegar. Alſo flowers, and hearbs may a long while be preſerved by the help thereof, ſo that you may have a roſe all the winter.

It preſerves alſo wine, if a little be mixed therewith. A little thereof being mixed with milk precipitates the cheeſe, which if it be rightly made is never corrupted, being like to ſuch cheeſe as they call *Parmeſan.* The whey of that milke diſſolves Iron, and cures any ſcab being waſhed therewith.

With the help of ſpirit of ſalt is made with honey, and ſugar a moſt pleaſant drink, not unlike to wine. There is made alſo of certain fruits with the ſpirit of ſalt a very good vinegar like to the Rheniſh vinegar. Such and many more things, which I wil not now divulge, may be done with ſpirit of ſalt.

And thus have I in ſome meaſure taught the uſe of the ſpirit of ſalt, which I would not have you take as if I had revealed all things; for, for brevities ſake, as alſo for ſome other reaſons I have ſilently paſſed over many things. Neither do I know all things my ſelf: but thoſe things, which I do know, I have ſo far declared that others may from thence have hints of ſeeking further. He that would deſcribe all, & every power & vertue thereof, had need to write a whole volume, that which is not my purpoſe at this time to do, but may prehaps be done another time. There ſhall alſo be ſhewed in the ſecond part of this book, ſome ſecrets which may be prepared by the help of this ſpirit: as how it may be dulcified to extract the tincture of gold, and of other metals, leaving a white body, which tincture is a medicine not to be ſlighted. Wherefore now ſeeing it is manifeſt how great things this ſpirit can do, every one will deſire a good quantity for his houſhold uſes, eſpecially ſeeing moſt excellent ſpirits may be made after an eaſie and ſhort way.

How an acid ſpirit, or vinegar may be diſtilled out of all vegetables, as bearbs, woods, roots, ſeeds,&c.

FIrſt put a few living coals into the furnace, then put upon them the wood that is to be diſtilled, that it may be burnt: out of which whileſt it is burning goes forth the acid ſpirit thereof into the receiver, where being condenſed it fals down into another receiver, reſembling almoſt common vinegar in its ſmell, wherefore alſo it is called the *vinegar of woods*.

And after this manner you may draw forth an acid ſpirit out of any wood, or vegetable, and that in a great quantity without coſts, becauſe the wood to be diſtilled is put but upon a very few living coals, and upon that another, for one kindles the other; and this ſpirit requires no more charges then of the wood to be diſtilled; which is a great difference betwixt this, and the common way of diſtilling, where beſides retorts, is required another fire; and out of a great retort ſcarce a pound of ſpirit is drawn in the ſpace of five or ſix hours; whereas in ours in the ſpace of one day, and that without any coſt or labor may be extracted twenty or thirty pound, becauſe the wood is immediately to be caſt into the fire to be diſtilled, and that not in pieces, but whole. Now this ſpirit (being rectified) may commodiouſly be uſed in divers Chymical operations, for it doth eaſily diſſolve animal ſtones, as the eyes of Crabs, the ſtones of Perches, and Carps, Corals alſo and Pearle, *&c.* as doth vinegar of wine. By means thereof alſo are diſſolved the glaſſes of metals, as of tin, lead, Antimony, and are extracted, and reduced into ſweet oyles.

This vinegar being taken inwardly of it ſelf doth cauſe ſweat wonderfully, wherefore it is good in many diſeaſes, eſpecially that which is made of Oake, Box, Guaiacum, Juniper,

per, and other heavy woods; for by how much the heavier the woods are, by ſo much the more acid ſpirit do they yeeld.

Being uſed outwardly it mundifies ulcers, wounds, conſolidates, extinguiſheth, and mitigates inflammations cauſed by fire; cures the ſcab, but eſpecially the decoction being made of its own wood in the ſame. Being mixed with warm water for a bath for the lower part of the body, it cures occult diſeaſes of women; as alſo malignant ulcers of the leggs.

This ſpirit therefore deſerves ſome place in the ſhops, *i.e.* it is unjuſtly rejected in the ſhops, ſeeing it is eaſie to be made. In diſtilling of wormwood and other vegetables, there remaines in the bottome of the furnace aſhes, which being extracted with warme water yeelds a ſalt by decoction, which being again diſſolved in its own ſpirit or vinegar, and filtred, doth by the evaporating of flegme, being placed in a cold place paſs into a Cryſtalline ſalt, which is of a pleaſant taſt, not like unto a *lixivium*, nor unto other ſalts that are diſſolved in aire. This ſalt is alſo more efficacious (being reduced into Cryſtals by its proper Spirit) then that which is made by the help of ſulphur, or Aqua fortis, and oyle of Vitrioll, and otherwayes which Chymiſts, and Apothecaries uſe.

The ſpirit of paper and linen cloth.

PEices of linen cloth gathered, and got from Sempſters being caſt into the furnace upon living coales yeeld a moſt acid ſpirit, which tingeth the nailes, skin, and hair with a yellow colour, reſtores members deſtroyed with cold, is good in a gangrene, and eryſipelas if linen clothes wet in the ſame be applyed thereto, *&c.* The ſame doth ſpirit made of paper, *viz.* of the peices thereof.

The ſpirit of Silk.

AFter the ſame manner is there a ſpirit made of pieces of ſilke, which is not ſo ſharpe as that which is made of linnen and paper, neither doth it tinge the skin, but is moſt excellent in wounds as wel old as green, and it makes the skin beautiful.

The ſpirit of mans haire, and of other animals, as alſo of horns.

OUt of horns alſo, and hair is made a ſpirit, but moſt fetid, wherefore it is not ſo uſeful, although otherwiſe it may ſerve for divers arts: being rectified it becomes clear and to be of the odour of the ſpirit of urine. It diſſolves common ſulphur, and yeelds a water, that cures the ſcab in a very ſhort time.

Now for this buſineſs ſhreds of woollen cloth undyed may ſerve, being caſt in a good quantity into the furnace. Pieces of cloth dipt in this ſpirit and hanged in vinyards and fields, keep out Deer and Swine from coming in, becauſe they are afraid of the ſmell of that ſpirit as of a huntſman that waits to catch them.

The ſpirit of vinegar, honey, and ſugar.

HE that will diſtill liquid things, muſt caſt red-hot coals into them, as for example into vinegar in the furnace, or if it be honey, or ſugar, let them firſt be diſſolved in water, by which means they will be drunk up by the coales, which being therewith impregnated, muſt afterwards at ſeveral times be caſt into the furnace, and be burnt; and whileſt the coals are burning that which is incombuſtible comes forth. And by this means you may diſtill liquid things in a great quantity.

Vinegar which is diſtilled this way, is of the ſame nature, as that which is diſtilled in cloſe veſſels.

But honey and ſugar that are diſtilled after this manner are a little altered, and acquire other vertues: but how they ſhall be diſtilled without the loſs of their volatile ſpirit ſhall be taught in the ſecond part. Alſo after this manner may all liquid things being drunk up by living coales be diſtilled.

Of the uſe of diſtilled vinegar many things might be ſaid; but becauſe the books of all the Chymiſts treat abundantly thereof, I account it needleſs to repeat what they have writ. Yet this is worth taking notice of, that the ſharpeſt vinegar hath a great affinity with ſome metals, which may be extract- by the help thereof; alſo diſſolved, and reduced into medicaments; yea many things may be made with the help thereof, as the books of all the Chymiſts teſtifie.

But there is yet another vinegar, of which there is often mention made in the books of the Philoſophers, by the help whereof many wonderful things are performed in the ſolutions of metals, the name whereof the ancients have been ſilent in; of which I do not here treat, becauſe it cannot be made by this furnace; but I ſhall treat of it in another part; yet ſo that I incur not the curſe of the Philoſophers.

How ſpirits may be made out of the ſalt of tartar, vitriolated tartar, the ſpirit of ſalt tartarizated, and of other ſuch like fixed ſalts.

As many Chymiſts as there hath been, almoſt all have been of the opinion that a ſpirit cannot be drawn out of ſalt of tartar, and other fixed ſalts. For experience hath taught that by retort little or no ſpirit can be drawn from thence, as I had often experience of before the invention of this furnace: the reaſon of which thing was the admixtion of ſand, earth, bole, pouder of tiles, &c. for to prevent the flowing of ſalt of tartar being by this means diſperſed. Bnt this is done through the ignorance of Authors, who have been ignorant of the properties of ſalt of tartar. For a ſtony matter, as ſand, flint, bole, *&c.* being mixed with ſalt of tartar, feeling the heat of the fire, and being made red with the ſame, is joyned to it moſt cloſely, ſo as no ſpirit can be drawn from thence, but become a moſt hard ſtone. For ſand, and ſuch things that are like to it, have ſo great an affinity with the ſalt of tartar that being once united can ſcarce ever be ſeparated. Yet it may be made by Art by the addition of pure ſand, or flint, becauſe the whole ſubſtance of the ſalt of tartar may be turned into a ſpirit in the ſpace of one or two hours, as ſhall be taught in the ſecond part, and it excels all other medicaments in vertue, in curing the ſtone, and gout. And if by the regiment of art there be left any *Caput Mortuum* in that diſtillation, it hath being diſſolved in the aire a power to putrefie metals being prepared, and mixed with it, in the ſpace of few hours, ſo as to make them become black, and to grow up like trees with their roots, trunks, & boughs, which by how much the longer they are ſo left, become the better. Of calx of lead being ſubtilized, and of ſalt of tartar may be made a *ſpiritus gradatorius* of wonderful vertues as well in medicine as Alchymie. There is made of the *Caput Mortuum, per deliquium* a green liquor which doth wonderful things; whence it is proved, *That Saturne is not the loweſt of the planets*; Enough to the wiſe.

And ſo is Lac Virginis, and the Philoſophical Sanguis Draconis made.

Sometimes there is found a certain earth, or bole, which hath no affinity with tartar, which being mixed with ſalt of tartar yeelds a ſpirit, but very little. But in this furnace may all fixed things be elevated, becauſe the Species not being included in it, but diſperſed, being caſt upon the fire, are from the fire elevated through the aire, and are being refrigerated in the recipients again condenſed, which cannot be ſo well done by a cloſe retort.

He therefore that will make the ſpirit of the ſalt of tartar, need do nothing elſe then to caſt the calcined tartar into the fire, and it will wholly come over in a ſpirit : but then there are required glaſs recipients, becauſe thoſe that are earthen cannot retain it.

And this is the way whereby moſt fixed ſalts are diſtilled into a ſpirit by the firſt furnace. In the ſecond furnace (*viz.* in the furnace of the ſecond part) it may be done better, and eaſier, where together with the preparation ſhall be taught the uſe thereof.

The ſpirits, flowers, and ſalts of Minerals and ſtones.

BY this way ſpirits may be raiſed from any minerall or ſtone, and that without the addition of any other thing: yet ſo as that the minerals, and ſtones, as flints, Cryſtal, talke, *lapis calaminaris*, Marcaſite, Antimony, being ground be with an Iron ladle caſt upon the coales, and there will ariſe together with a certain acid ſpirit, ſome ſalt and flowers, which are to be waſhed off from the recipients, and filtred, and the flowers will remain in *Charta bibula*, for the water together with the ſpirit, and the ſalt paſſeth through the filter, all which may be ſeparated, rectified and be kept by themſelves for their proper uſes. Now this you muſt know, that you muſt chooſe ſuch minerals which have not been touched by the fire, if you deſire to have their ſpirit.

How minerals, and metals may be reduced into flowers, and of their vertues.

HItherto the flowers of metals, and minerals have not been in uſe, excepting the flowers of Antimony, and ſulphur, which are eaſily ſublimed : for Chymiſts have not dared to attempt the ſublimation of other metals, and fixed minerals, being content with the ſolution of them with Aqua fortis, and corroſive waters, precipitating them with the liquor of ſalt of tartar, and afterward edulcorating, and drying them ; and being ſo prepared they have called them their flowers : but by which flowers I underſtand the ſame ~~water~~, matt which is by the help of fire without the addition of any other thing ſublimed, and turned into a moſt ſubtile pouder, not to be perceived by the teeth or eyes, which indeed is (in my judgement) to be accounted for the true flowers; when as the flowers which others make are more corporeal, and cannot be ſo well edulcorated, but retaine ſome ſaltneſs in them, as may be perceived by the increaſe of their weight, and therefore hurtful to the eyes, and other parts.

But our flowers being by the force of the fire ſublimed by themſelves, are not only without ſaltneſs, but are alſo ſo ſubtile that being taken inwardly preſently operate, and put forth their powers, *viz.* according to the pleaſure of the Phyſitian. Neither is their preparation ſo coſtly as the others.

Metals alſo, and minerals are maturated, and amended in their ſublimation, that they may be the more ſafely taken; but in other preparations they are rather deſtroyed, and corrupted, as experience witneſſeth: Now how theſe kind of flowers are to be made I ſhall now teach, and indeed of each metal by it ſelf, whereby the artiſt in the preparation cannot erre, and firſt thus.

Of Gold and Silver.

GOld and ſilver can hardly be brought into flowers, becauſe many are of opinion, that nothing comes from them in the fire, eſpecially from Gold, although it ſhould be left there for ever: which although it be true, *viz.* that nothing comes from gold in the fire, although it ſhould remaine there a long time, and from ſilver but a little, except it have copper or any other metal mixed, which yet vapours away but by little and little.

Which I ſay although it be ſo, yet they being broken and ſubtilized and ſcattered upon coales, and ſo diſperſed, may by the force of the fire and help of the aire be ſublimed, and reduced into flowers.

Now ſeeing the aforeſaid metals are dear, and of a great price, and the furnace with its recipients large, I would not that any one ſhould caſt them in, eſpecially gold, becauſe he cannot recover them all; but I ſhall to thoſe that deſire to make theſe flowers ſhew another way in the ſecond part, whereby they may make them without the loſs of the metal; to which I referr the reader. For this furnace ſerves for the ſubliming of metals, and minerals, which are not ſo pretious, the looſing of part whereof is not ſo much regarded. And thus much is ſaid to ſhew that gold, and ſilver, although fixed, may be ſublimed. Now other metals may more eaſily be ſublimed, yet one more eaſily then another, neither need they any other preparation but beating ſmall, before they be caſt into the fire.

Flowers of Iron and Copper.

TAke of the filings of Iron or Copper, as much as you pleaſe, caſt them with an Iron laddle upon burning coals, *viz.* ſcatteringly, and there wil ariſe from Iron a red vapour, but from Copper a green, and will be ſublimed into the ſublimatorie veſſels. As the fire abates it muſt be renewed with freſh coales, and the caſting in of theſe filings be continued, uutill you have got a ſufficient quantity of flowers, and then you may let all coole. This being done take off the ſublimatorie veſſels, take out the flowers, and keep them, for they are very good if they be mixed with unguents, and emplaſters: and being uſed inwardly cauſe vomiting; therefore they are better in Chirurgery, where ſcarce any thing is to be compared to them. Copper being diſſolved in ſpirit of ſalt, and precipitated with oyle of vitriol, edulcorated, dryed, and ſublimed, yeelds flowers, which being in the aire reſolved into a green balſom, is moſt uſeful in wounds and old putrid ulcers, and is a moſt pretious treaſure.

Flowers of Lead and Tin.

YOU need not reduce theſe metals into ſmall crums, it is ſufficient if they be caſt in piece by piece, but then you muſt under the grate put an earthen platter glazed, and filled with water, to gather that which flows down melted, which is to be taken out, and caſt again into the fire, and this ſo often until all the metall be turned into flowers, which afterwards are again, the veſſels being cold, to be taken out, as hath been ſaid of the flowers of *Mars* and *Venus*. And theſe flowers are moſt excellent being mixed with plaiſters and oyntments in old and geeen wounds, for they have a greater power to dry, then metals calcined, as experience can teſtifie.

Of Mercury.

THis is eaſily reduced into flowers, becauſe it is very volatile, but not for the aforeſaid reaſon, becauſe it leapes in the fire, and ſeeks to deſcend. And if you deſire to have the flowers thereof, mix it firſt with ſulphur that you may pulverize it, and caſt it in mortified. And if you caſt into a red hot crucible ſet in the furnace, a little quick Mercury, *viz.* by times with a laddle, preſently it will fly out, and ſome part thereof will be reſolved into an acid water, which is to be preferred before the flowers in my judgement; but the reſt of the Mercury drops into a receiver. But here are required glaſs veſſels, becauſe the aforeſaid water is loſt in earthen. And this water without doubt doth ſomething in Alchymie: It is alſo good being applyed outwardly, in the ſcab, and venereal ulcers.

The flowers of Zinck.

IT is a wonderful metal, and is found in the ſpagyrical anatomie to be meer ſulphur, golden, and immature. Being put upon burning coales doth ſuddenly fly away wholly;

it is inflamed alſo, and partly burns like common ſulphur, with a flame of another colour, *viz.* golden purple: and yeelds moſt gallant white, and light flowers.

The uſe.

BEing given from 4. 5. 6. grains to 12. they provoke ſweat wonderfully, and ſometimes vomit, and ſtooles according to the offending matter. The vertues thereof being exteranlly uſed are alſo wonderful, for there are not found better flowers; for they do not only ſpeedily conſolidate freſh wounds, but alſo old, ſuch as alwayes drop water, in which caſes they excell all other medicaments. For they are of ſuch dryneſs, which hath joyned with it a conſolidating vertue, as that they do even things incredible. They may be uſed divers wayes, as to be ſtrewed by themſelves putting over them a ſtiptick plaiſter, or being brought into a unguent with honey to be put into wounds; which unguents in deep wounds may be boyled to a hardneſs for the making of ſmall ſuppoſitories, which are to be put into the wounds, which muſt afterwards be covered with ſome plaiſter, and preſerved from the aire. Being applyed after this manner they cure fundamentally, being mixed with plaiſters alſo they do wonderfull things.

If they be mixed with roſe, or raine water, ſo as to be united together, and afterwards ſome of this mixture be ſometimes every day dropt into red eyes that water, yeelding not to other ophthalmicks, do reſtore, and heal them.

Theſe flowers being taken up in lint and ſtrewed upon thoſe places of Children that are galled with their urine (thoſe places being firſt waſhed with water) heale them quickly. They heale alſo quickly any excoriation which is contracted by lying long in any ſickneſs, and is very paineful, if they be ſtrewed thereon.

Theſe flowers alſo are more eaſily diſſolved in corroſive waters, then other metals, and minerals, neither doth the ſpirit leave them in the fire, but an inſipid phlegme only diſtill diſtils off leaving a fat, and thick oyl, as is above ſaid concerning the *lapis calaminaris*, being ordained for the ſame uſes, but more efficaciouſly then that. Which ſpirit if it be by the violence of fire driven forth, is of ſo great ſtrength, that it can ſcarce be kept. And not only ſpirit of ſalt, but alſo Aqua fortis, and Regia may after this manner be exalted, ſo as to be able to do wonderful things in the ſeparation of metals; but here is not place for theſe things they ſhall be ſpoken of in the fourth part.

But you need not make flowers for this work, becauſe crude Zinck doth the ſame, although the flowers do it ſomething better: whence it appears that a metal contracts a higher degree of dryneſs in ſublimation.

Flowers of Antimony.

THere is no difficulty to make the flowers of Antimony, for Chymiſts have a long time made uſe of them, and becauſe their preparation was tedious, they were not ſold at a low rate.

Wherefore there was no body willing to attempt any thing elſe in them, becauſe they were uſed only for vomiting; the doſe whereof was from 1. 2. 3. 4. grains to 8. and 10. in affects of the ſtomack and of the head, as alſo in feavers, plague, morbus gallicus, *&c.* Neither is it a wonder if Chymiſts tryed no farther in them, for we ſee that there are found men in theſe dayes who perſwade themſelves that there is nothing which was not found out by the learned ancients, can be found out in theſe dayes, and if there were any thing to be yet found out it was found out already by them. But this opinion truly is very fooliſh, as if God gave all things to the ancients, and reſerved nothing for them that ſhould come after. Neither indeed do they underſtand nature in their operations, which works inceſſantly, and is not wearyed in her labours, *&c.* But however it is manifeſt that God hath revealed things in theſe times which were hid from them of

old,

old, and he will not ceaſe to do the ſame even to the end of the world.

But to return to our purpoſe againe, which is to ſhew an eaſier way of making the flowers of Antimony, whereby a greater quantity may be had, as alſo that they may ſerve for other uſes.

Take of crude Antimony poudered as much as you pleaſe, & firſt make your furnace red hot, then caſt in at once a pound of Antimony, or thereabouts, *viz.* ſcatteringly upon the coals; and preſently it will flow, and mixed with the coals by the force of the fire will be ſublimed through the aire into receivers like a cloud, which will there be coagulated into white flowers. Note that when the firſt coales are burnt up, more muſt be put in to continue the ſublimation, and thoſe muſt be firſt kindled before they are put in, leſt the flowers be by the duſt of the coales ariſing together with the flowers diſcoloured, and contract thence a gray colour: but it matters not if you will not uſe them by themſelves to provoke vomiting, becauſe there is no danger thereby, for that colour comes only from the ſmoake of the coales, wherefore you need not be afraid of them. But let him that diſlikes this colour, firſt kindle the coales before he put them into the furnace, and then he ſhall have white flowers. Alſo you muſt not ſhut the middle hole, through which the coales, and Antimony are caſt in, that thereby the fire may burn the more freely: for elſe the flowers of the ſuperior pots will be yellow and red, by reaſon of the ſulphur of the Antimony, which is ſublimed higher then the regulus. Now you may by this way make a pound of the flowers with 3.4.5. pound of coals. It is a little that goes away from the Antimony, *viz.* the combuſtible ſulphur, which is burnt, all the reſt going into flowers. You muſt have a care to provide a ſufficient quantity of ſubliming pots by reaſon that a large ſpace is required for the ſublimation of the flowers.

The flowers that are prepared after this way are ſold at a lower rate, ſo that one pound thereof is cheaper, then half an ounce of thoſe that are made after the other manner. Alſo they are ſafer, as being made with an open and free flame of the fire, for they do not provoke vomit ſo vehemently; morever the flowers of the lower pots are not vomiting, but diaphoretical, as if they had been prepared with nitre, for thus they are corrected by the fire; And by this way at one and the ſame operation divers flowers of divers operations may be made, for the flowers of the lower pots are diaphoretical, of the middle a little vomitive, but of the uppermoſt vehemently vomitive. For by how much the more they have endured the fire, by ſo much the better are they corrected; from whence the diverſity of their power proceeds. Wherefore each of them are to be kept by themſelves, and the uppermoſt for plaiſters or butter, or oyle, and thoſe to be made ſweet or corroſive thereby; The midle for purging, and vomiting, but the lowermoſt for ſweat, being more excellent then *Bezoardicum Minerale*, or *Antinomium Diaphoreticum* made with nitre. Truly I do not believe that there is an eaſier way of making vomiting, and diaphoretical flowers then ours. Now for the uſe of them, you muſt know that thoſe that are vomitive are to be adminiſtred to thoſe that are ſtrong, and accuſtomed to vomit: but to children, and old men with diſcretion, as hath been ſaid above of the butter of Antimony: but thoſe that are diaphoretical may be given without danger to old and young, to thoſe that are in health, and to the ſick; in any affection that requires ſweat, as in the plague, Morbus Gallicus, ſcorbute, leproſie, feavers, *&c.* The Doſe of them is from *3. 6. 9.* 12. graines to 24. with proper vehicles to ſweat in the bed: for they do expel as well by ſweat, as by urine all evil humors. And becauſe they that are vomitive are in a greater quantity then thoſe, that are diaphoretical, and not ſo neceſſary as theſe, and there may be many more doſes out of them, it is neceſſary to ſhew you how thoſe that are vomitive may be turned into diaphoreticall: and that may be done three wayes, the two former whereof I have before ſhewed concerning the butter of Antimony made of flowers with ſpirit of ſalt, the third is this, *viz.* put flowers in a crucible covered (without luting) leſt any thing fall into it, ſo ſet them by themſelves in a gentle fire, that they melt not, but be made only darkly glow for the ſpace of ſome hours, then let them coole, for they are become fixed, and diaphoreticall. Although they had before contracted ſome yellowneſs or aſh colour, yet by this means they are made white and gallant, fixed, and diaphoretical. Alſo theſe flowers are uſed in ſtiptick plaiſters by reaſon of their dry nature, with which they are endued.

Alſo they are melted into a yellow tranſparent glaſs, neither is there taught an eaſier way of reducing Antimony by it ſelf into a yellow tranſparent glaſs, where crude Antimony is firſt ſublimed, and being ſublimed is melted into glaſs.

This ſublimation ſerves in ſtead of calcination, by the help whereof 20. pound are more eaſily ſublimed, then by the help of the other one pound is brought into calx.

Neither is there here any danger of the aſcending fumes, becauſe when the Antimony is caſt into the fire you may be gone, which is a ſafe, and eaſie calcination, whereas the common way requires the continual preſence of the artiſt ſtirring the matter, who alſo takes out the matter when it is once grown together, and grinds it again; by which means he hath much to do, before the matter come to a whiteneſs; but by our way, the matter is at the firſt time made ſufficiently white, and more then by that common way of calcination and agitation. I ſuppoſe therefore that I have ſhewed to him that will make glaſs of Antimony, the beſt, and hitherto unknown way; which being taught I hope there is no man will hereafter like a fool go that tedious way of the ancients, but rather follow my ſteps. For by this way may any Phyſitian, moſt eaſily be able to prepare for himſelf vomitive and diaphoretical flowers, and alſo glaſs of Antimony *per ſe.*

Of thoſe flowers may be made oyles both ſweet and corroſive, and other medicaments, as hath been above ſaid of the ſpirit of ſalt, and ſhal afterwards be ſpoken in the ſecond part.

Let him that will make flowers of the regulus, fairer then thoſe which are made of crude Antimony, caſt it being poudered into the fire, and in all things proceed as hath been ſaid, and he ſhall have them, *&c.* for they are eaſily ſublimed. Now, how the regulus is to be made after a compendious manner you ſhall finde in the fourth part. The ſcory alſo are ſublimed, ſo as nothing is loſt. But he that will make flowers that ſhall be diſſolved in the aire into a liquor muſt adde ſome calcined tartar, or ſome other fixt vegetable ſalt, and he ſhall have flowers that will be diſſolved in any liquor: but he that will make red flowers as well thoſe that are diaphoretical as thoſe that are purging, muſt mix Iron, and he ſhall have flowers like to cinnabar: Let him that deſires green, mix copper, if purple, *lapis calaminaris.*

And thus out of any mineral may be made flowers whether it be fixed, or volatile; for it is forced to fly on high being caſt into the fire. And theſe may be uſed diverſly in Chirurgery, in plaiſters and unguents; for they dry, and aſtringe potently, eſpecially thoſe that are made of *lapis calaminaris.* Neither are they to be ſlighted that are made of the golden, and ſilver marcaſite. Thoſe that are made of Arſenic and auripigmentum are poyſonous, but are uſeful for painters. Arſenic,& auripigmentum being calcined with nitre,and then ſublimed,yeeld flowers that are ſafely to be taken inwardly, expelling all poyſons by ſweat and ſtoole. For they are corrected two wayes,*viz.* firſt by by the nitre, ſecondly by the fire in the ſubliming: they are not therefore to be feared, becauſe that Antimony was poyſonous before the preparation thereof. For by how much the greater poyſon it was before preparation,ſo much the greater medicine afterwards.

The flowers of ſulphur are taught in the ſecond part, although they may alſo be made by this furnace,*viz.* the nature,and properties thereof being known by an expert artiſt or otherwiſe it is burnt.

So alſo ſtones being prepared are brought into flowers, and many other things, of which we need not ſay any thing, only let him that pleaſeth make tryal thereof.

And now I ſuppoſe I have made plain, and ſhewed you cleerly how diſtillation is to be made in this our firſt furnace, wherefore I will now end. He therefore that underſtands and knows the fabrick of the furnace (which he may underſtand by the delineation thereof) and the uſe thereof, will not deny but that I have done a good work, and will not diſapprove of my labor.

And this is the beſt way of diſtilling, and ſubliming incombuſtible things. In the ſecond part you ſhall finde another furnace in which are diſtilled, combuſtible things, as alſo moſt ſubtile ſpirits, &c. The firſt furnace ſerves alſo for other uſes, as the ſeparation of metals; of the pure from the impure; for the making of the central ſalt, and of the *humidum radicale* of them all. But becauſe it cannot be done after the aforeſaid way, by which things are caſt into the fire to get their flowers, and ſpirits, but after a certain ſecret Philoſophical maner, by the power of a certain ſecret fire, hitherto concealed by the Philoſophers (neither ſhall I proſtrate that ſecret before all) It is ſufficient that I have given a hint of it for further enquirie, and have ſhewed the way to other things.

FINIS.

THE
SECOND PART
OF THE
PHILOSOPHICAL FURNACES:
WHEREIN
Is deſcribed the Nature of the
SECOND
FVRNACE;

By the help whereof all volatile, ſubtle
and combuſtible things can be diſtilled.

Whether they be Vegetables, Animals, or Minerals, and
that after an unknown and very compendious way;
whereby nothing is loſt, but even the moſt ſubtile ſpirits
may be caught and preſerved, which elſe without the
means of this Furnace is impoſſible to be done by
Retorts or other diſtilling Inſtruments.

By JOHN RUDOLPH Glauber.

LONDON,
Printed by *Richard Cotes*, for *Tho: Williams* at the ſigne
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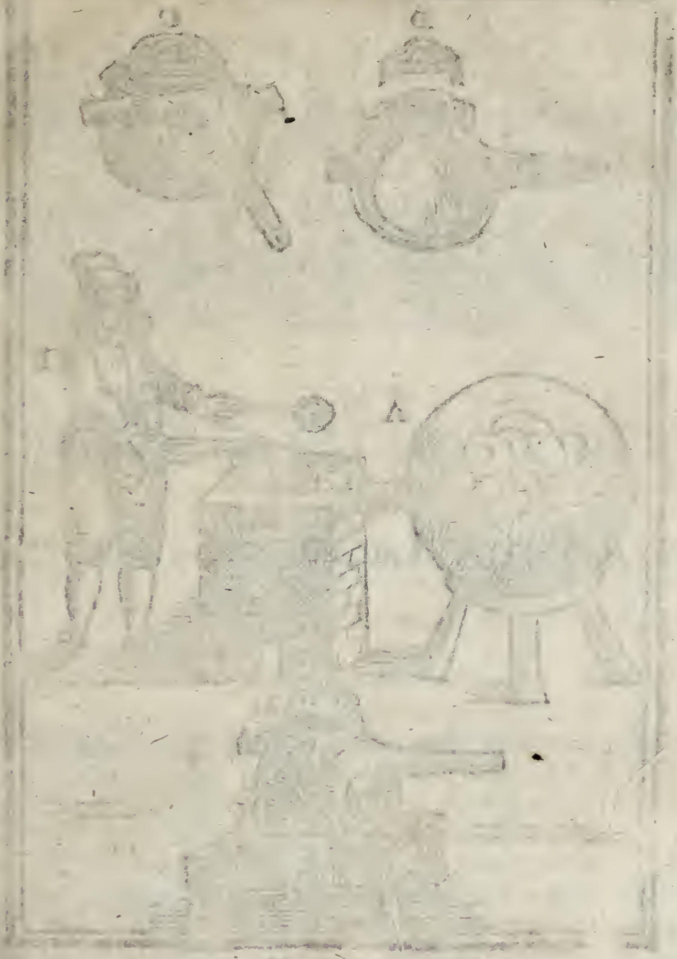

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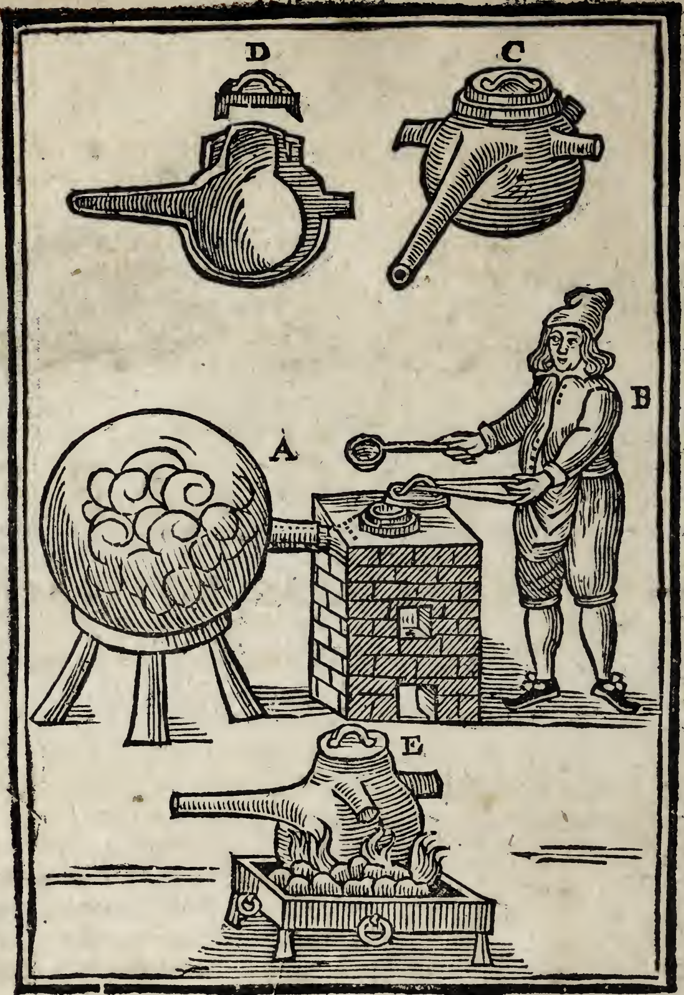


A. The furnace together with the iron diſtilling-veſſel faſtened into it, whereunto a receiver is applyed. B. The diſtiller with his left hand taking off the lid, and with his right caſting in his prepared matter. C. The externall form of the diſtilling veſſel. D. The internal form of the veſſel. E. Another diſtilling veſſel, which is not faſtened to a furnace, but only ſtandeth upon coals.

THE

THE SECOND PART OF PHILOSOPHICAL FURNACES.

The ſtructure of the ſecond Furnace.

THE Diſtilling veſſel muſt be made of Iron, or good earth, ſuch as can abide in the fire (whereof in the fift part of this Book it ſhall be taught) and you may make it as big or as little as you pleaſe, according as your occaſion ſhall require. That of Iron is moſt fit to be uſed for ſuch ſpirits, as are not very ſharpe or corroding, elſe they would corrode the veſſel: but that of earth may be uſed for ſuch things, as ſhew their activity upon the Iron, and do make it to melt, as ſulphur, Antimony and the like ; and therefore you ought to have two ſuch veſſels, *viz.* one of iron, and one of earth, to the end that for both ſorts of materials (corroſive or not corroſive) you may have proper veſſels, and fit furnaces for their diſtilling, and that they may not be ſpoiled by things contrary and hurtful to them. The ſhape of the veſſel is ſhewed by the figure here annexed, *viz.* the lower part of it ſomewhat wider then the upper part, and twice as high as wide; at the top having a hollow ſpace between the two edges or brims, whereinto the edge of the lid may cloſe and enter into an inch deep. The lid muſt have a ring or handle, by which it may be taken off and put on again with a paire of tongs. The lid muſt have a deepe edge anſwering to the hollow ſpace aforeſaid. The lower part muſt have three knobbs or ſhoulders thereby to reſt upon the wall of the furnace; the form whereof is no other, then that of a common diſtilling furnace with ſand Capel, as the figure of it doth ſhew: but if you will not have the furnace, then it needeth no knobbs or ſhoulders, if ſo be the diſtilling veſſel be flat at the bottom, or elſe have leggs, for to ſtand upon them: Beneath the edge of the veſſel there comes forth a ſpout or pipe of a ſpan in length, and one or two inches wide, and ſomewhat narrower before then behinde, through which the ſpirits are conveighed into the Receiver.

The way or the manner to perform the deſtillation.

WHen you intend to diſtill, then firſt make a fire in he furnace, that the diſtilling veſſel come to be very hot. But if it be not faſtned to the furnace, then ſet it upon a grate, and lay ſtones about it, and coales between, and ſo let it grow hot, and lay melted lead into the ſpace between the two edges or brims, to the end, that the lid, when it is put on, may cloſe exactly, ſo that no ſpirit can get through. This done take a little of the matter you intend to diſtil and caſt it in and preſently put on the lid, and there will be no other paſſage left but through the pipe, to which there muſt be applyed and luted a very big receiver. As ſoon as the ſpecies caſt in come to be warm, they let go their ſpirit, which doth come forth into the receiver: and becauſe there was but little of the matter caſt in it hath no power to force through the lute or to break the receiver, but muſt ſettle it ſelf. This done, caſt in a little more of your matter, cover it and let it go till the ſpirit be ſettled: continue this proceeding ſo long, untill you have ſpirits enough: but take heed, that you carry in no more at once, then the receiver is able to bear, elſe it will break. And when your veſſel is full the diſtillation not being ended, then take off the lidd, and with an iron ladle take out the Caput Mortuum; and ſo begin again to caſt in, and ſtill but a little at a time, and continue this as long as you pleaſe.

Thus in one day you may diſtil more in a ſmal veſſel, then otherwayes you could do in a great retort; and you need not fear the leaſt loſs of the ſubtile ſpirit, nor the breaking of the receiver by the abundance of the ſpirits: and you may ceaſe or leave off your diſtilling and begin it again when you liſt: alſo the fire cannot be made too ſtrong ſo that it might cauſe any hurt or damage; but by this way you can make the moſt ſubtle ſpirits, which is impoſſible to be done by any Retort. But if you will diſtil a ſubtle ſpirit through a Retort, as of Tartar, Hartſhorn, Salarmoniac, or the like, you cannot do it without prejudice (though there were but half a pound of the matter in it) the ſubtleſt ſpirits coming forth with force ſeek to penetrate through the lute if that be not good, but if that be good ſo that the ſpirits cannot paſs through it, then they break the receiver, becauſe it cannot poſſibly hold ſuch a quantity of ſubtle ſpirits at once. For when they are coming, they come ſo plentifully and with ſuch a force, that the receiver cannot containe them, and ſo of neceſſity muſt flye aſunder, or muſt paſs through the lutum; All which is not to be feared here, becauſe there is but a little caſt in at once, which cannot yeeld ſuch a quantity of ſpirits, as to force the receiver to break: And when there come forth no more ſpirits, and the former is ſettled, then more of the matter is to be caſt in, and this is to be continued ſo long untill you have ſpirits enough. Afterward take off the receiver, and put the ſpirit into ſuch a glaſs (as in the fifth part of this book amongſt the Manuals ſhall be diſcovered) wherein it may be kept ſafely without waſting or evaporating.

In this manner all things, Vegetable, Animal, or Mineral, can be diſtilled in this furnace, and much better then by means of a Retort: eſpecially ſuch ſubtile ſpirits (as by the other way of diſtilling cannot be ſaved, but paſs through the lutum) are got by this our way; and they are much better, then thoſe heavy oyles, which commonly are taken for ſpirits, but are none, being only corroſive waters. For the nature and condition of a ſpirit is to be volatile, penetrating and ſubtle, and ſuch are not thoſe ſpirits of ſalt, Vitriol, Allome and Nitre, which are uſed in Apothecary ſhops, they being but heavy oyles, which even in a warm place do not evaporate or exhale.

But a true ſpirit fit for Medicinal uſe, muſt riſe or aſcend before the phlegme, and not after; for whatſoever is heavier then phlegme, is no volatile ſpirit, but a heavy ſpirit or (rather called) a ſowre heavy oyle. And it is ſeen by the experience that the Apothecaries ſpirit of vitriol will cure no falling ſickneſs, which vertue is aſcribed to that ſpirit, and indeed juſtly: for the true ſpirit of vitriol performeth that cure out of hand. Likewiſe their ſpirit of Tartar (as they call it) is no ſpirit, but only a ſtinking phlegme or Vinegar.

The way to make ſuch true ſpirits, I will now ſhew becauſe much good may be done by them in all manner of diſeaſes. And this way of diſtilling ſerveth only for thoſe which ſeek after good medicines: but others which care not whether their medicines be well prepared or no, need not take ſo much pains as to build ſuch a furnace, and to make their ſpirits themſelves, for at any they can buy for a ſmall matter a good quantity of dead and fruitleſs ſpirits at the common ſellers and Apothecaries.

Hence it is no marvel, that now a dayes ſo little good is done by Chymicall medicaments, which of right ſhould far outſtrip all the Galenical in goodneſs and vertue. But alas! it is come to that paſſe now, that a true Chymiſt and honeſt ſon of *Hermes*, is forced almoſt to bluſh, when he heareth men talk of Chymical medicines, becauſe they do no ſuch miracles, as are aſcribed unto them. Which infamy is occaſioned by none more then by careleſs Phyſitians, which though they make uſe of Chymicall medicines (becauſe they would faine be eſteemed to know more then others) yet they do take greater care for their kitchin, then for the welfare of their patients; and ſo buying ill prepared medicines of unskilful ſtillers, and withall uſing them undiſcreetly (whereby they many times do more hurt then good to the ſick) they do lay ſuch foule aſperſions upon the noble Art of Chymiſtry.

But an Induſtrious and accurate Phyſitian is not aſhamed to make his medicines himſelf, if it be poſſible, or at leaſt to have them made by good and well exerciſed Artiſts: whereupon he may better relye and get more credit, then one that knoweth not whereof, nor how his medicine which he doth adminiſter to his patients is prepared. But ſuch wicked and ignorant men will one day fal ſhort of their anſwer before the Judgement of the righteous Samaritane.

How to make the Acid oyle and the volatile ſpirit of Vitriol.

Hitherto I have taught, how to diſtill in general, and to get the ſubtle ſpirits. There remaineth now to deſcribe what manuals or preparations are fitting for every matter in particular; and firſt,

Of Vitriol.

TO diſtill Vitrioll, there needs no other preparation, but onily that it be well viewed, and if there be any filth amongſt it, that the ſame be carefully pickt out, leſt being put together with the Vitriol into the diſtilling veſſel, the ſpirit be corrupted thereby. But he that will go yet more exactly to work, may diſſolve it in faire water, then filtrate it, and then evaporate the water from it till a skin appear at the top, and then ſet it in a cold place, and let it ſhoote again into Vitrioll; and then you are ſure that no impurity is left in it.

Now your veſſel being made red hot, with an Iron ladle caſt in one or two ounces of your vitriol at once, put on the lid, and preſently the ſpirits together with the phlegme will come over into the receiver, like unto a white cloud or miſt; which being vaniſhed, and the ſpirits partly ſettled, carry in more Vitriol, and continue this ſo long, until your veſſel be full: Then uncover your veſſel, and with a pair of tongs or an iron ladle take out the Caput Mortuum, and caſt more in; and continue this proceeding as long as you pleaſe, ſtill emptying the veſſel when it is filled, and then caſting in more matter, and ſo proceeding untill you conceive that you have got ſpirits enough. Then let the fire go out, and let the furnace coole; take off the receiver, and powre that which is come over into a retort, and lay the retort in ſand, and by a gentle fire diſtill the volatile ſpirit from the heavy oil; having firſt joyned to the retort the receiver, which is to receive the volatile ſpirit, with a good lutum, ſuch as is able to hold ſuch ſubtle ſpirits, the making whereof ſhall be taught in the fifth part of this book amongſt the Manuals.

All the volatile ſpirit being come over, which you may know by the falling of bigger dropps, then take off the receiver, and cloſe it very well with wax, that the ſpirit may not make an eſcape; then apply another (without luting it) and ſo receive the phlegme by it ſelf, and there will remaine in the retort a black and heavy corroſive oyle, which if you pleaſe, you may rectifie, forcing it over by a ſtrong fire, and then it will be clear; if not, let all coole, then take out your Retort together with the black oyle, and pour upon it the Volatile ſpirit, which in the rectifying went over firſt; put the retort into the ſand, and apply a receiver, and give it a very gentle fire, and the volatile ſpirit will come over alone leaving its phlegme behinde with the oyle, which by reaſon of its dryneſs doth eaſily keep it. Thus the ſpirit being freed from all phlegme, is become as ſtrong as a meer fire, and yet not corroſive. And if this ſpirit be not rectified from its own oyle, it will not remaine good, but there doth precipitate a red pouder after it hath ſtood for ſome ſpace of time, and the ſpirit looſeth all its vertue, in ſo much that it is not to be diſcerned from ordinary water, which doth not happen when it is rectified. The reaſon of this precipitation is no other then the weakneſs of the ſpirit, which is accompanied with too much water, and therefore not ſtrong enough for to keep its ſulphur, but muſt let it fall: but after it is rectified by its own oyle, it can keep its ſulphur well enough, becauſe then it is freed from its ſuperfluous moiſture. However the red powder is not to be thrown away, but ought to be kept carefully; becauſe it is of no leſs vertue then the ſpirit it ſelf. And it is nothing elſe but a Volatile ſulphur of Vitrioll, It hath wonderfull vertues, ſome of which ſhall be related.

The uſe and Doſe of the Narcotick ſulphur of Vitrioll.

OF this ſulphur 1. 2. 3. 4. or more grains (according to the condition of the patient) given at once mitigates all pains, cauſeth quiet ſleep; not after the manner of Opium, Henbane, and other the like medicines, which by ſtupefying and benumming cauſe ſleep, but it performeth its operation very gently and ſafely without any danger at all, and great diſeaſes may be cured by the help thereof. *Paracelſus* held it in high eſteeme, as you may ſee, where he doth wtite of *Sulphur embryonatum.*

Of the uſe and vertue of the Volatile ſpirit of Vitrioll.

THis ſulphureous volatile ſpirit of Vitrioll, is of a very ſubtle and penetrating quality, and of a wonderful operation; for ſome drops thereof being taken and ſweated upon it, doth penetrate the whole body, openeth all obſtructions, conſumeth thoſe things that are amiſs in the body, even as fire. It is an excellent medicine in the falling ſickneſs, in that kinde of madneſs or rage which is called *Mania*, in the convulſion of the mother, called *Suffocatio matricis*, in the ſcurvy; in that other kinde of madneſs which is called Melancholia Hypochondriaca; and other diſeaſes proceeding from obſtructions and corruption of the blood: It is alſo good in the plague, and all other feavers: mingled with ſpirit of wine, and daily uſed, it doth wonders in all external accidents: Alſo in the Apoplexy, ſhrinking and other diſeaſes of the Nerves, the diſtreſſed limbe rubbed therewith, it doth penetrate to the very marrow in the bones; it doth warm and refreſh the cold ſinews, grown ſtiffe: In the Colick, beſides the internal uſe, a little thereof in a clyſter applyed, is a preſent help: Externally uſed in the Goute, by anoynting the places therewith aſſwageth the pains, and taketh away all tumors and inflammations: it doth heale the ſcabs, tetters and ringworms, above all other medicines; it cureth new wounds and old ſores, as Fiſtulaes, Cancers, Woolves, and what name ſo ever elſe they may have: It extinguiſheth all inflammations, ſcaldings, the Gangrene, diſſipateth and conſumeth the knobs and excreſcencies of the skin. In a word, this ſpirit, which the wiſe men of old called *Sulphur Philoſophorum*, doth act univerſally in all diſeaſes, and its vertue cannot ſufficiently be praiſed and expreſſed: And it is much to be admired, that ſo excellent a Medicine is no where to be found.

If it be mingled with ſpring water, it doth make it pleaſantly ſowriſh, and in taſt and vertue like unto the natural ſowre water of wels.

Alſo by this ſpirit many diſeaſes may be cured at home; ſo that you need not go to bathes afar off, for to be rid of them.

Here I could ſet down a way, how ſuch a ſpirit may be got in great abundance for the uſe of bathing, without diſtillation, whereby miraculous things may be done; but by reaſon of the ungratefulneſs of men, it ſhall be reſerved for another time.

Of the vertue and uſe of the corroſive oyle of Vitrioll.

THis oyle is not much uſed in Phyſick, although it be found almoſt in every Apothecaries ſhop, which they uſe for to give a ſowriſh taſt to their ſyrups and conſerves. Mingled with ſpring water and given in hot diſeaſes, it will extinguiſh the unnatural thirſt, and coole the internal parts of the body. Externally it cleanſeth all unclean ſores, applyed with a feather; it ſeparateth the bad from the good, and layeth a good foundation for the cure.

Alſo if it be rectified firſt, ſome metals may be diſſolved with it and reduced into their Vitriols, eſpecially Mars and Venus; but this is to be done by adding common water thereunto, elſe it will hardly lay hold on them. The way of doing it is thus:

How to make the Vitrioll of Mars and Venus.

TAke of your heavy oyle, juſt as it came over, *viz.* together with its phlegme (but that the Volatile ſpirit be drawn off from it firſt) as much as you pleaſe, put it into a glaſs body together with plate of copper or iron, ſet it in warme ſand, and let it boyle untill that the oyle will diſſolve no more of the metal, then power off the liquor, filtre it through brown paper, and put it into a low gourd glaſs, and ſet it in ſand, and let the phlegme evaporate untill there appear a skin at the top, then let the fire go out, and the glaſs grow coole; then ſet it in a cold place, and within ſome dayes there will ſhoote faire green Cryſtals; if of iron, greeniſh; if of Copper, then ſomething blewiſh; take them out and dry them uppon filtering paper, the remaining liquor, which did not ſhoote into Vitriol, evaporate again in ſand, and then let it ſhoote as before; continue this proceeding, untill all the ſolution (or filtred liquor) be turned to Vitriol. This Vitrioll is better and purer then the common; for it yeeldeth a better Volatile ſpirit, and for that reaſon I did ſet down the way how to make it. There can alſo be made a good Vitrioll of both theſe metals by the means of ordinary yellow brimſtone; but becauſe the making of it is more tedious, then of this here ſet down, I think it needleſs to deſcribe its preparation in this place.

The way to make a faire blew Vitrioll out of Luna *(that is, ſilver.)*

DIſſolve the ſhavings or filings of ſilver with rectified oyle of Vitrioll, adding water thereunto, but not ſo much as to Iron and Copper: Or elſe, which is better, diſſolve calcined ſilver, which hath been precipitated out of Aqua fortis either with Copper or ſalt water; the ſolution being ended powre it off and filtre it, and drop into it of ſpirit of urine or of Sal armoniac, as long as it doth hiſs, and almoſt all the ſilver will precipitate again out of the oyle, and ſo there will fall a white powder to the bottome; This precipitated ſilver together with the liquor poure into a phiall-glaſs, ſet it to boyle in ſand for twenty four hours, and the liquor will diſſolve again almoſt all the precipitated ſilver-calx and become blew thereby. Then poure off the ſolution (or liquor) and filtre it through brown paper, and abſtract the moiſture till a skin ariſe at the top; then in a cold place let it ſhoote to Vitriol. With the remaining liquor proceed further, as above in the preparation of the Vitriol of Iron and Copper hath been taught.

By this way you will get an excellent Vitrioll out of ſilver, which from 4. 5. 6. to 10. grains uſed onely of it ſelf, will be a good purge, eſpecially in diſeaſes of the braine.

If you have a good quantity of it, that you may diſtill a ſpirit thereof, you will get not only an acide (or ſowre) but alſo a volatile ſpirit, which in the infirmities of the braine is moſt excellent; that which in the diſtilling remains behinde, may be reduced againe into a body, ſo that you loſe nothing of the ſilver, ſave onely that which is turned into ſpirit.

Moreover, the acide (or ſowre) oyle of common Vitriol, doth precipitate all metals and ſtones of beaſts or fiſhes; alſo pearles and corals, they being firſt diſſolved in ſpirit of ſalt or of Nitre, and maketh faire light powders of them (which by the Apothecaries are called Magiſteries) much fairer then by precipitation with ſalt of Tartar is done, eſpecially of corals and pearles, ſuch a faire gliſtering and delicate powder is made; and likewiſe alſo of mother of pearle, and other ſhels of ſnailes, that it giveth as fair a gloſs to them, as the faireſt oriental pearles have; which way hath not been made common hitherto, but being known only to few, hath been kept very ſecret by them, as a ſingular Art. Such magiſteries commonly were precipitated out of vinegar onely by ſalt of Tartar, which for lightneſs, whiteneſs and fair gloſs are not comparable at all to ours: But if in ſtead of the oyle of Vitriol you take oyle of ſulphur, then theſe powders will be fairer then when they are done by the oyle of Vitriol, in ſo much, that they may be uſed for painting for a black skin.

Having made mention of Magiſteries, I cannot forbear to diſcover the great abuſe and error, which is committed in the preparing of them.

Paracelſus in his Archidoxes teacheth to make Magiſteries, which he calleth extracted Magiſteries: but ſome of his diſciples teach to make precipitated Magiſteries, which are quite different from the former. *Paracelſus* is clean of another opinion in the preparing of his Magiſteries, then others in the making of theirs: doubtleſs *Paracelſus* his Magiſteries were good cordiall living medicines, whereas the other were but dead carkaſes, and although they be never ſo faire, white and gliſtering, yet in effect they prove but a groſs earthy ſubſtance, deſtitute of vertue.

I do not deny, but that good medicines may be extracted out of pearles and corals, for I my ſelf alſo do deſcribe the preparations of ſome of them; but not at all after ſuch a way as theirs is. For what good or exalting can be expected by ſuch a preparation, where a ſtony matter is diſſolved in corroſive waters, and then precipitated into ſtone again? Can its vertue be increaſed thereby? ſurely no, but rather it is diminiſhed, and made much the worſe thereby. For it is well known, that the corroſive ſpirits (no leſs then fire) do burn ſome certain things; for not all things are made better by fire or corroſives, but moſt of them are abſolutely ſpoyled by them. Some perchance will ſay, that ſuch preparations of Mag iſteries are onely for to be reduced into a finer powder, that ſo much the ſooner they may perform their operation. To which I anſwer, that pearles, corals, and other of the like nature, if they be once diſſolved by corroſive waters, and then precipitated and edulcorated, never or hardly can be diſſolved againe by acid ſpirits. Whence it is evident that by ſuch preparations they are not opened or made better, but rather cloſed or made worſe. And we ſee alſo by daily experience that thoſe Magiſteries do not thoſe effects, which are aſcribed unto them. By which it appeareth cleerly, that to the Archeus of the ſtomach they are much leſs grateful then the crude unprepared corals and pearles; whoſe tender eſſence being not burnt up by corroſives, do oftentimes produce good effects. For our Anceſtors have aſcribed unto corals and pearles, that they purifie the impure and corrupt blood in the whole body, that they expel Melancholy and ſadneſs, comforting the heart of man, and making it merry, which alſo they effectually perform: whereas the Magiſteries do not. And this is the reaſon, why unprepared corals, pearles and ſtones of fiſhes have more effect, then the burnt Magiſteries. For it is manifeſt and well known, that the aboveſaid diſeaſes for the moſt part do proceed from obſtructions of the ſpleen, which obſtructions are nothing elſe, but a tartarous juice or a ſowre flegme which hath poſſeſſed and filled up the entrals, and coagulated it ſelf within them. By which obſtruction not only head-ach, giddineſs, panting of the heart, trembling of the limbs, a ſpontaneous laſſitude, vomits, unnatural hunger; alſo, loathing of victuals; then cold, then hot fluſhing fits, and many more ſtrange ſymptomes are cauſed; but alſo a moſt hurtful rottenneſs and corruption is introduced into the whole maſs of blood, from whence the leproſie, ſcurvy, and other loathſome or abominable ſcabs do ſpring.

Of which evil the onely cauſe (as hath been ſaid) is a crude acide Tartar, from which ſo many great diſeaſes do riſe.

This to be ſo may eaſily be proved; for it is notorious, that melancholik folks, hypocondriaques, and others do often caſt up a great quantity of acid humor, which is ſo ſharpe that no vinegar is comparable to it, and doth ſet their teeth on ſuch an edge, as if they had eaten unripe fruit.

What remedy now? take away the cauſe and the diſeaſe is taken away. If you could take away the peccant matter by purgings, it would be well, but it remaineth obſtinate and will not yeeld to them. By vomit it may be diminiſhed in ſome meaſure. But becauſe that not every one can abide vomiting, it is therefore no wiſdome to turn evil into worſe. Shall then this tartar be killed and deſtroyed by contraries, which indeed in ſome ſort may be effected; as when you uſe vegetables or animals, whoſe vertue conſiſteth in a volatile ſalt: ſuch are all ſpecies or ſorts of creſſes, Muſtard-ſeed, horſe-radiſh, ſcurvy graſs, alſo the ſpirit of Tartar, of Hartſhorn, and of urine and the like, which by reaſon of their penetrating faculty paſs through all the body, finding out the Tartar thereof, deſtroying the ſame, as being contrary unto it; and in this combat two contrary natures is kindled, a great burning heat, whereby the whole body is throughly heated and brought to ſweating; and whenſoever by theſe contraries a ſweating is cauſed, there is alwayes mortified ſome of this hurtful Tartar. But becauſe that of that acid humor but a little at a time can be mortified and edulcorated by contrary volatile ſpirits, and that therefore it would be required to uſe them often, for to kill and expell all the Tartar; and becauſe alſo (as hath been mentioned before) a ſtrong ſweat alwayes is cauſed by every ſuch operation, whereby the natural ſpirits are much weakened, ſo that the patient would not be able to hold out long thereby, but by taking away of one evil, another and greater one would be occaſioned.

And therefore ſuch things muſt be offered to that hungry acid humor, by which the corroſive nature thereof, may be mortified and grow ſweet, with that proviſo nevertheleſs,that thoſe things be ſuch as are not contrary or hurtful to the nature of man, but grateful and friendly, as are corals, pearles and crabs eyes,*&c.*

For amongſt all ſtones none are more eaſily to be diſſolved then Pearles, Corals, Crabbs-eyes, and other ſtones of fiſhes.

But the truth of this,*viz.* that every corroſive is killed by feeding upon pearles and corals, and thereby can be made ſweet; and beſides, how a ſowre coagulated Tartar, by the help of corals or pearles may be reduced to a ſweet liquor (a pleaſant and acceptacle medicine to the nature of man) which never can be coagulated again by any means, ſhall be afterwards proved and taught when I ſhall come to treate of Tartar.

Now in tartareous coagulations and obſtructions of the internals proceeding from the predominancy of an acid humor there is no better remedy, then to give the patient every morning faſting from ℈ſs. to ʒ i. (more or leſs,according to the condition of the patient) of red corals and pearles made into powder,and to let him faſt two or three hours upon it, and ſo to continue daily untill you ſee amendment : By this means the hurtful acid humor is mortified,and dulcified by the corals and pearles ſo that afterwards it may be overcome by nature, whereby the obſtructions are removed, and the body freed from the diſeaſe.

This my opinion of the abuſe of Magiſteries and the good uſe of Corals I could not conceale although I do know for certain, that it will take but with few, in regard that it will ſeem very ſtrange to moſt. However, happily there may be ſome yet, that will not be unwilling to ſearch into the truth and to conſider further of it, and at laſt will finde this not to be ſo ſtrange, as it ſeemed to them at the firſt: but he that cannot believe or comprehend it, may keep to his Magiſteries.

And if it ſeem ſo ſtrange unto any, that corals or pearles made into powder ſhall be concocted in the ſtomach, and ſo put forth their vertue, what will you ſay then, if I do prove, that even whole pearles, crabs-eyes, and corals being ſwallowed, are totally conſumed by the Melancholy humor, ſo that nothing cometh forth again among the excrements? and which is more, even the like may be ſaid of hard and corrupted metals, as Iron, and ſpeaucer or *Zinck*: But this muſt be underſtood only of thoſe that are of a Malancholick conſtitution but not ſo in others, *viz*, thoſe that are of a ſanguine, and thoſe that are of a phlegmatick conſtitution, to whom ſuch like things are ſeldome preſcribed. For I have ſeen many times, that againſt obſtructions to ſtrong bodies there hath been given at once from ℈ß. to ʒ i. of the ſhavings or filings of iron, and they found much good by it, yea more help then by other coſtly medicines of the Apothecaries, whereof they had uſed many before, but to no purpoſe, by reaſon whereof their excrements came from them black, juſt as it uſeth to fall out with thoſe that make uſe of medicinal ſowre waters, which run through iron mines, and thereby borrow a ſpiritual mineral vertue.

Now if thoſe filings of iron had not been conſumed in the ſtomach, how come it that the excrements are turned black? ſo then it is ſufficiently proved, that even a hard unprepared metal can be conſumed in the ſtomach: and it ſo, why not as well ſoft pearles and corals?

Which is alſo to be ſeen by children, that are troubled with worms, if there be given unto them 4.6.8. to 12. or 16. grains of the fineſt filings of ſteel or iron, that all the worms in the body are killed thereby, their ſtomach and guts ſcowred very clean, and their ſtools alſo turned black. But this muſt be obſerved by children, when the worms are killed, and yet remaine in the guts (becauſe that the iron in a ſmall quantity is not ſtrong enough for to expell them, but only make the body ſoluble) that a purge muſt be uſed after, for to carry them out; for elſe if they do remaine there, others will grow out of their ſubſtance. But to thoſe that are more in yeers, you may give the Doſe ſo much the ſtronger, as from ℈ i. to ʒ i. that the worms alſo may be carryed out, they beeing better able to endure it then little children, and although ſometimes a vomit doth come,yet it doth no hurt,but they will be but ſo much the healthier afterward.

And thus Iron may be uſed, not only againſt worms, but alſo againſt all ſtomach-agues, head-ach, and obſtructions of the whole body, without any danger and very ſucceſſefully, as a grateful or very acceptable medicine to Nature; for after a powerful magnetical way it doth attract all the ill humors in the body, and carrieth them forth along with it. Of whoſe wonderful vertue and nature, there is ſpoken more at large in my treatiſe of the Sympathy and Antipathy of things. Which ſome Phyſitians perceiving and ſuppoſing by Art to make it better, they ſpoiled it, and made it voyd of all vertue: for they taking a peece of ſteel, made it red-hot, and held it againſt a peece of common Sulphur, whereby the ſteel grew ſubtle,ſo they did let it drop into a veſſel filled with water; then they took it out, and dryed it, and made it into powder, and uſed it againſt obſtructions, but to no effect almoſt; for the Iron was ſo altered by the ſulphur and reduced to an inſoluble ſubſtance (which ought not to have been ſo) that it could perform no conſiderable operation: But if they had made the ſteel more ſoluble (whereas they made it more inſoluble) then it was of it ſelf before, then they had done a good work: for he that knoweth ſulphur, doth know well enough, that by no *Aquafortis* or *Aqua Regis* it can be diſſolved; and how could it then be conſumed by an animal humor?

Hitherto it hath been proved ſufficiently, that in ſome men, eſpecially in thoſe that are of a Melancholick conſtitution there is an acid humor, which can ſufficiently diſſolve all eaſily ſoluble metals and ſtones: and that therefore it is needleſs to torture, and diſſolve pearles, corals and the like with corroſive waters before they be adminiſtred to patients: but that the Archeus of the ſtomach is ſtrong enough by the help of the ſaid humors to conſume thoſe eaſily ſoluble things, and to accept of that which ſerveth his turn, and to reject the reſt.

But it is not my intent here, that this ſhould be underſtood of all metals and ſtones; for I know well, that other metals and ſtones (ſome excepted) before they are duly prepared, are not fit for phyſick, but muſt be fitted firſt, before they be adminiſtred or given unto patients.

For this relation I made only for to ſhew, how ſometimes good things (though with intent to make them better) are made worſe and ſupplyed by thoſe that do not make an exact ſearch into nature and her power.

I hope this my admonition will not be taken ill, becauſe my aime was not vaine-glory, but only the good of my neighbor.

Now let us return again to Vitriol.

Of the ſweet oyle of Vitriol.

THE Ancients make mention of a ſweet and green oyle of Vitriol, which doth cure the falling ſickneſs, killeth worms, and hath other good qualities & vertues beſides: and that the Oyle is to be diſtilled *per deſcenſum.* To attain unto this oyle the later Phyſitians took great paines, but all in vaine: becauſe they did not underſtand at all the Ancients about the preparing of this oyle, but thought to get it by the force of fire, and ſo uſing violent diſtillation, they got no ſweet oyle, but ſuch as was very ſowre and corroſive, which in taſte, efficacy and vertue was not comparable at all to the former.

However they aſcribed unto it (though falſely) the ſame vertues, which the ancients (according to truth) did unto theirs. But daily experience ſheweth, that the oyle of vitriol as it is found ordinarily, cureth no falling ſickneſs, nor killeth worms, whereas this Philoſophical doth it very quickly. Whence it appeareth, that the other is nothing like unto the true medicinal oyle of vitriol, neither is it to be compared to it.

I muſt confeſs indeed, that *per deſcenſum* out of common vitriol, by the force of the fire, there may be got a greeniſh oyle, which yet is not better then the other becauſe it proveth as ſharpe in taſte, and of as corroding a quality, as if it had been diſtilled through a Retort.

Thoſe that found out this oyle, as *Paracelſus*, *Baſilius*, and ſome few others, did alwayes highly eſteem it, and counted it one of the foure maine pillars of Phyſick. And *Paracelſus* ſaith expreſly in his writings, that its viridity or greenneſs muſt not be taken away or marred (which indeed a very little heat can do) by the fire; for (ſaith he) if it be deprived of its greenneſs, it is deprived alſo of its efficacy and pleaſant eſſence. Whence it may be perceived ſufficiently, that this ſweet green oyle is not to be made by the force of the fire as hitherto by many hath been attempted, but in vaine.

And it is very probable, that the ancients, which did ſo highly praiſe the oyle of vitriol, happily knew nothing of this way of diſtilling, which is uſed by us now a dayes: for they only ſimply followed Nature, and had not ſo many ſubtle and curious inventions and wayes of diſtilling.

But however it is certain, that ſuch a ſweet and green oyle cannot be made of vitrioll by the force of the fire, but rather muſt be done by purification, after a ſingular way; for the Ancients many times underſtood purification for diſtillation: as it is evident, when they ſay, Diſtill through a filtre, or through filtring paper: which by us is not accounted for diſtillation, but by them it was.

However, this is true and very ſure, that a great Treaſure of health (or for the health of man) lyeth hidden in Vitriol: yet not in the common, as it is ſold every where, and which hath endured the heat of the fire already; but in the Oare as it is found in the earth, or its mine. For as ſoon as it cometh to the day light, it may be deprived by the heat of the Sun of its ſubtle and penetrating ſpirit, and ſo made voyde of vertue; which ſpirit, if by Art it be got from thence, ſmelleth ſweeter then musk and amber, which is much to be admired, that in ſuch a deſpicable mineral and groſs ſubſtance (as it is deemed to be by the ignorant) ſuch a royal medicine is to be found.

Now this preparation doth not belong to this place, becauſe we treat here only of ſpirits, which by the force of fire are driven over. Likewiſe alſo, there doth not belong hither the preparation of the green oyle, becauſe it is made without the helpe of fire. But in regard, that mention hath been made of it here, I will (though I kept it alwayes very ſecret) publiſh it for the benefit of the poor patients, hoping that it will do much good to many a ſick man.

For if it be well prepared, it doth not only cure perfectly every Epilepſie or Convulſion in young and old; and likewiſe readily and without faile killeth all worms within and without the body, as the Ancients with truth aſcribed unto it; but alſo many Chronical diſeaſes and ſuch as are held incurable, may be happily overcome and expelled thereby, as the plague, pleureſie, all ſorts of feavers and agues, what ever they be called, head-ach, colick, riſing of the mother; alſo all obſtructions in the body, eſpecially of the ſpleen and liver, from whence *Melancholia Hypochondriaca*, the ſcurvy, and many other intolerable diſeaſes do ariſe: Alſo the blood in the whole body is by the means thereof amended and renewed, ſo that the Pox, Leproſie and other like diſeaſes proceeding from the infection of the blood are eaſily cured thereby: Alſo it healeth ſafely and admirably all open ſores and ſtinking ulcers turned to fiſtula's in the whole body, and from what cauſe ſo ever they did proceed, if they be anoynted therewith, and the ſame alſo be inwardly uſed beſides.

Such and other diſeaſes more (which it is needleſs here to relate) may be cured ſucceſſefully with this ſweet oyle; eſpecially, if without the loſs of its ſweetneſs it be brought to a red colour; for then it will do more then a man dare write of it, and it may ſtand very well for a P*anacea* in all diſeaſes.

The preparation of the ſweet oyle of Vitriol.

COmmonly in all fat ſoyles or clayie grounds, eſpecially in the white, there is found a kinde of ſtones, round or oval in form, and in bigneſs like unto a pigeons or hens-egg, and ſmaller alſo, *viz.* as the joynt of ones finger, on the outſide black, and therefore not eſteemed when it is found, but caſt away as a contemptible ſtone. Which if it be cleanſed from the earth, and beaten to peeces, lookes within of a fair yellow and in ſtreaks, like a gold Marcaſite, or a rich gold Oare; but there is no other taſte to be perceived in it, then in another ordinary ſtone; and although it be made into powder, and boyled a long time in water, yet it doth not alter at all, nor is there in the water any other taſte or colour, then that which is had firſt (when it was powred upon the ſtone) to be perceived. Now this ſtone is nothing elſe, but the beſt and pureſt Minera (or Oare) of Vitrioll, or a ſeed of Metals; for Nature hath framed it round, like unto a vegetable ſeed, and ſowed it into the earth, out of which there can be made an excellent medicine, as followeth.

Take this Oare or Minera beaten into peeces, and for ſome ſpace of time, lay or expoſe it to the coole aire, and within twenty or thirty dayes it will magnetically attract a certain ſaltiſh moyſture out of the aire, and grow heavy by it, and at laſt it falleth aſunder to a black powder, which muſt remaine further lying there ſtill, untill it grow whitiſh, and that it do taſte ſweet upon the tongue like vitriol. Afterward put it in a glaſs-veſſel, and poure on ſo much faire raine water, as that it cover it one or two inches; ſtirr it about ſeveral times in a day, and after a few dayes the water will be coloured green, which you muſt powre off,and powre on more faire water, and proceed as before, ſtirring it often untill that alſo come to be green: this muſt be repeated ſo often, until no water more will be coloured by ſtanding upon. Then let all the green waters which you poured off,run through filtring paper, for to purifie them; and then in a glaſs-body cut off ſhort let them evaporate till a skin appear at the top: then ſet it in a cold place, and there will ſhoote little green ſtones, which are nothing elſe but a pure vitriol: the remaining green water evaporate again, and let it ſhoote as before: and this evaporating and Cryſtalliſing muſt be continued untill no vitriol more will ſhoote, but in warm aud cold places there remaine ſtill a deep green pleaſant ſweet liquor or juyce: which is the true ſweet and green oyle of Vitriol and hath all the vertues above related.

But now this green oyle further without fire may at laſt (after the preparing of many fair colours between) be reduced to a blood red, ſweet and pleaſant oyle, which goeth far beyond the green both in pleaſantneſs and vertue, and is in compariſon to it like a ripe grape to an unripe: Hereof happily ſhall be ſpoken at another time,becauſe occaſion and time will not permit me now to proceed further in it. And therefore the Philo-Chymical Reader is deſired for the preſent to be contented with the green oyle, to prepare it carefully, and to uſe it with diſcretion; and doubtleſs he will get more credit by it, and do more wonderfull things then hitherto hath been done by the heavy corroſive oyle.

The uſe and Doſe of the ſweet oyle of Vitriol.

OF this green oyle, there may be taken from 1.2.4.8. to 10. or 12. drops at once, according to the condition of the patient and the diſeaſe, in fit Vehicles, in Wine or Beer, in the morning faſting, as other medicines are uſually taken: Alſo the Doſe may be increaſed or leſſened, and as often reiterated as the diſeaſe ſhall require it.

This Oyle expelleth all ill humors, not only by ſtoole and vomits, but alſo by urine and ſweating, according as it doth meet with ſuperfluities; and this very ſafely, and without any danger at all; whereby many diſeaſes radically or perfectly can be cured.

Let no man wonder that I aſcribe ſuch great vertues unto this oyle, it coming from ſuch a deſpicable ſtone, and its preparation requiring no great Art or paynes, as thoſe intricate deceitful proceſſes do, that are every where extant in books quite filled up with them. And it is no marvel, that men are in love with ſuch falſe and coſtly proceſſes; for the moſt of them do not believe, that any good is to be found in things that are not in eſteeme; but onely make great account of deer things, far fetcht, and requiring much time and paines for to be prepared.

Such men do not beleeve the word of God, teſtifying, *That God is no reſpecter of perſons*, but that all men that fear and love him, are accepted of him. If this be true (which no good Chriſtian will doubt) then we muſt beleeve alſo, that God created Phyſick or the matter of Phyſick as well for the poor as for the rich. Now if it be alſo for the poor, then certainly ſuch will be the condition thereof, that it may be obtained by them, and eaſily prepared for uſe. So we ſee that Almighty God cauſeth not onely in great mens grounds to come forth good vegetables, Animals and Minerals, for the curing of the infirmities of mankinde, but that the ſame alſo are found every where elſe. Whereby we perceive, that it is alſo the will of God, that they ſhall be known by all men, and that he alone, as the Maker of all good, may be praiſed and magnified by all men for the ſame.

I doubt not but that there will be found ſelf-conceited ſcoffers, that will deſpiſe this ſo little regarded ſubject, as if no good thing could be made of it, becauſe they could finde nothing in it themſelves. But be it known to them, that neither to me nor them all things have been diſcovered, but that yet many wonderful works of Nature are hidden to us: and beſides that I am not the firſt that writ of Vitriol and its medicine. For the Ancients our dear Anceſtors had alwayes Vitriol in very great eſteem, as the following Verſe doth prove:

> *Viſitabis Interiora Terræ Rectificando*
> *Invenies Occultum Lapidem Veram Medicinam.*

Whereby they would give us to underſtand, that a true medicine is to be found in it. And the ſame alſo was known to the latter Philoſophers: for *Baſilius* and *Paracelſus* have alwayes highly commended it, as in their writings is to be found.

It is to be admired, that this Oare or Metallical ſeed, which may juſtly be called the gold of the Phyſitians (in regard that ſo good a medicine can be made of it) is not changed or altered in the earth, like other things that grow in it, but keepeth alwayes the ſame form and ſhape, untill it cometh to the aire, which is its earth or ground, wherein it putrefieth & groweth. For firſt it ſwelleth and groweth like as a vegetable ſeed doth in the earth: and ſo taketh its increaſe & grows out of the aire, juſt as a ſeed of an hearb in the earth; and the earth is not only its Matrix, wherein it groweth and doth increaſe like a vegetable, but it is alſo its Sun which maketh it ripe. For within four weeks at the furtheſt it putrefieth and groweth black: and about a fourtnight after it groweth white, and then green; and thus far it hath been deſcribed here: But if you proceed further Philoſopher-like therewith, there will come forth to light at the laſt the faireſt red, and moſt pleaſant Medicine, for which God be praiſed for ever and ever, Amen.

Of the ſulphureous volatile and Acide ſpirit of common Salt, and of Allome.

THE ſame way, which above hath been taught for the making of the volatile ſpirit of vitriol, muſt be likewiſe uſed in the making of the volatile ſpirits of common ſalt and allome.

The manner of preparing.

ALlome is to be caſt in as it is of it ſelf, without mixing of it, but the ſalt muſt be mixed with bolus or ſome other earth, to keep it from melting: with the ſpirit volatile, there goeth alſo along an acid ſpirit, whoſe vertue is deſcribed in the 1. part. The Oyle of allome hath almoſt the like operation with the oyle of vitriol. Alſo the ſpirit volatile of both theſe, is of the ſame nature and condition with that which is made of vitriol: and the common ſalt, and allome do not yeeld as much, as the vitriol; unleſs both, *viz.* ſalt and allome be mixed together, and ſo a ſpirit diſtilled of them.

Of the ſulphureous volatile ſpirit of Minerals and Metals, and of their preparation.

SUch a penetrative ſulphureous ſpirit can be made alſo of Minerals and Metals, which in vertue goeth beyond the ſpirit of vitriol, that of common ſalt, and that of allome, *viz.* after the following manner.

The preparation of the volatile ſpirits of Metals.

DIſſolve either Iron or Copper, or Lead or Tin with the acid ſpirit of vitriol or of common ſalt: abſtract or draw off the phlegme; then drive the acid ſpirit againe from the Metal, and he will carry along a volatile ſpirit, which by rectifying muſt be ſeparated from the corroſive ſpirit. And ſuch Metallical ſpirits are more effectual then thoſe that are made of the ſalts.

The preparation of the volatile ſpirit of Minerals.

TAke of Antimony made into fine powder, or of gold-Marcaſite, or of ſome other ſulphureous Mineral, which you pleaſe, two parts, Mixe therewith 1. part of good purified Salt nitre, and caſt in of that mixture one little quantity, and then an other, and ſo forth after the manner above deſcribed; and there will come over a ſpirit which is not inferior to the former in efficacy and vertue; but it muſt alſo be well rectified.

Another way.

CEment what laminated or granulated Metal you pleaſe (except gold) with half as much in weight of common Sulphur, cloſed up in a ſtrong melting pot or crucible, ſuch as doth not let the Sulphur go through, for the ſpace of half an houre, untill that the Sulphur hath penetrated and broken the plates of Metals: Then beat them into powder, mixe them with the like quantity in weight of common ſalt, and ſo diſtill it after the way above mentioned, and you will get a volatile ſpirit of great vertue: and every ſuch ſpirit is to be uſed for ſuch ſpecial part or member of the body, as the Metal is proper for it, out of which the ſpirit is made. So Silver for the braine; Tinne for the lungs, Lead for the ſpleen, and ſo forth.

The ſpirit of Zinck.

OF Zinck there is diſtilled both a volatile and alſo an acid ſpirit, good for the heart; whether it be made by the help of the ſpirit of Vitrioll, or of ſalt, or of Allome: or elſe by the means of Sulphur; for Zinck is of the nature of gold.

The volatile ſpirit of the Droſſe of the Regulus Iron.

THe black ſcoria of the *Regulus Martis*, being firſt faln aſunder in the aire, yeilds likewiſe a very ſtrong ſulphureous volatile ſpirit, not much unlike in vertue unto the former.

The like Sulphureous volatile ſpirits can be made alſo of other minerals, which for brevities ſake we do omit, as alſo in regard, that they are almoſt the ſame in vertue.

How to make a white acid, and a red volatile ſpirit out of ſalt nitre.

TAke two parts of Allome, and one part of ſalt nitre, make them both into powder, mix them well together, and caſt into the ſtill a little and a little thereof, as above in the making of other ſpirits hath been taught, and there cometh over an acid ſpirit together with the volatile ſpirit; and ſo many pounds as there is of the materials, which are to be caſt in, ſo many pounds of water muſt be put into the receiver, to the end that the volatile ſpirits may ſo much the better be caught and ſaved. And when the diſtillation is performed, the two ſpirits may be ſeparated by the means of a gentle rectification made in *Balneo*; and you muſt take good heed, that you get the volatile ſpirit pure by changing the receiver in a good time, ſo that no flegme be mixed with the red ſpirit, whereby it will be weakened and turn white. The marke whereby you may perceive, whither the ſpirit or the flegme doth go forth is this: when the volatile ſpirit goeth, then the receiver looketh of a deep red : and afterward when the flegme doth come,the receiver looks white again : and laſtly, when the heavy acide ſpirit goeth , then the receiver to be red again, but not ſo as it is was, when the firſt volatile ſpirit came over.

This ſpirit can alſo be made and diſtilled after another way,*viz.* mixing the ſalt nitre with twice as much bole or brick duſt, and ſo framed into little bals to prevent melting : but no way is ſo good as the firſt ; eſpecially when you will have the red volatile ſpirit.

Of the uſe of the red volatile ſpirit.

THis volatile ſpirit, which (being quite freed from flegm) remaineth alwayes red, and doth looke like blood, in all occaſions may be accounted like in vertue unto the former ſulphureous ſpirits,eſpecially in extinguiſhing of inflammations & gangrenes it is a great treaſure,the clothes being dipt in it,& laid upon the grieved place;Alſo it goeth almoſt beyond all other medicines in the Eryſipelas and colick : and if there be any congealed blood in the body (which came by a fall or blow) this ſpirit outwardly applyed with ſuch waters as are proper for the grief, & alſo taken inwardly,doth diſſolve and expell it : and being mingled with the volatile ſpirit of urine it doth yeild a wonderful kinde of ſalt, as hereafter ſhall be taught.

The uſe of the white acid ſpirit of ſalt nitre.

THe heavy and corroſive ſpirits of ſalt nitre is not much uſed in Phyſick, though it be found almoſt in all Apothecaries ſhops, and there is kept for ſuch uſe, as above hath been mentioned of the ſpirit of vitriol, *viz.* to make their conſerves and cooling-drinks taſt ſowriſh. Alſo it is uſed by ſome in the colick, but it is too great a corroſive, and too groſs to be uſed for that purpoſe ; and although its corroſiveneſs may be mitigated in ſome meaſure, by adding of water thereto,yet in goodneſs and vertue it is not comparable at all to the volatile ſpirit, but is as far different from it , as black from white, and therefore the other is fitteſt to be uſed in Phyſick; but this in dealing with metals and minerals, for to reduce them into vitriols, calxes, flores, and crocus.

Aqua Regis.

IF you diſſolve common ſalt (which hath been decrepitated firſt) in this acid ſpirit of ſalt nitre, and rectifie it through a glaſs retort (lying in ſand) by a good ſtrong fire, it will be ſo ſtrong, that it is able to diſſolve gold, and all other metals and minetals, except ſilver and ſulphur; and ſeveral metals may by the means thereof be ſeparated much better then by that Aqua regia which hath been made by adding of Salt Armoniack. But if you rectifie it with *lapis calaminaris* or Zinck, it will be ſtronger yet, ſo as able to diſſolve all metals and Minerals (ſilver and ſulphur excepted) whereby in the handling of Metals, much more may be effected, then with common ſpirit of ſalt nitre or ſulphur, as now hereafter ſhall be taught and firſt in the preparing of gold.

The preparation of Aurum fulminans or Aurum Tonitruans.

TAke of fine granulated or laminated gold (whither it be refined by Antimony or *Aqua fortis*) as much as you pleaſe: put it in a little glaſs body, and powre four or five times as much of *Aqua regis* upon it, ſet it ſtopt with a paper in a gourd in warme ſand; and the *Aqua regis* within the ſpace of one or two hours will diſſolve the gold quite into a yellow water: but if it have not done ſo; it is a ſigne, that either the water was not ſtrong enough, or that there was too little of it for to diſſolve it. Then powre the ſolution from the gold, which is not diſſolved yet into another glaſs; and poure more of freſh *Aqua Regia* upon the gold: ſet it again to diſſolve in warme ſand or aſhes, and the remaining gold will likewiſe be diſſolved by it, and then there will remaine no more, but a little white calx, which is nothing elſe but ſilver, which could not be diſſolved by the *Aqua Regia* (for the *Aqua Regia* whither it be made after the common way with ſalt Armoniack, or elſe with common ſalt, doth not diſſolve ſilver) ſo in like manner common *Aqua fortis*, or ſpirit of ſalt nitre diſſolveth no gold; but all other metals are diſſolved as well by ſtrong *Aqua fortis* as by *Aqua Regia*. And therefore you muſt be careful to take ſuch gold as is not mixed with Copper, elſe your work would be ſpoiled: for if there were any Copper mixed with it, then that likewiſe would be diſſolved and precipitated together with the gold; and it would be a hindrance to the kindling or fulminating thereof: but if you can get no gold; that is without Copper, then take Ducats or Roſe-nobles, which ought to have no addition of Copper, but onely of a little ſilver, which doth not hurt, becauſe that it cannot be diſſolved by the *Aqua Regia*, but remaineth in the bottome in a white powder. Make thoſe Ducats or Roſe nobles red hot, and afterward bend them, and make them up in roles, and throw them into the *Aqua Regia* for to diſſolve. All the gold being turned into yellow water, and poured off, poure into it by drops a pure oyle made of the Salt of Tartar *per deliquium*, and the gold will be precipitated by the contrary liquor of the Salt of Tartar into a brown yellow powder, and the ſolution will be clear. But you muſt take heed, to pour no more oyle of Tartar into it then is needful for the precipitation of the gold; elſe part of the precipitated gold would be diſſolved again, and ſo cauſe your loſs. The gold being well precipitated, poure off the cleer water from the gold calx by inclination and poure upon it warm raine or other ſweet water, ſtir it together with a clean ſtick of wood, and ſet it in a warm place, until the gold is ſettled, ſo that the water ſtandeth cleer upon it again; then poure it off, and poure on other freſh water, and let it extract the ſaltneſs out of the gold calx: and this pouring off, and then pouring on of freſh water againe, muſt be reiterated ſo often, untill no ſharpneſs or ſaltneſs more be perceived in the water that hath been poured off: Then ſet the edulcorated gold into the *Sun* or another warm place for to dry. But you muſt take heed that it have no greater heat then the heat of the Sun is in *May* or *June*, elſe it would kindle or take fire, and (eſpecially if there be much of it) give ſuch a thunder clap, that the hearing of thoſe that ſtand by, would be much endangered thereby, and therefore I adviſe you to beware and cautious in the handling of it, leſt you run the hazard both of your gold and of your health by your overſight.

There is alſo another way for to edulcorate your precipitated gold, *viz.* thus, take it together with the ſalted liquor, and poure it into a funnel lined with brown paper laid double, and ſo let the water run through into a glaſs veſſel, whereupon the funnel doth reſt, and poure on other warm water, and let it run through likewiſe; do this again, & again untill that the water come from it as ſweet as it was poured on. Then take the paper with the edulcorated gold calx, out of the funnel, lay it together with the paper upon other brown paper lying ſeverally double together, and the dry paper will attract all the moyſtneſs out of the gold calx, ſo that the gold can be dryed the ſooner. Which being dry, take it out of the filtring paper, and put it into another that is clean, and ſo lay it aſide, and keep it for uſe. The ſalted water that came through by filtring, may be evaporated in a little glaſs body (ſtanding in ſand) until to the dryneſs of ſalt (*ad ſiccitatem ſalis*) which is to be kept from the aire: for it is likewiſe uſeful in phyſick; becauſe ſome vertue of the nature of gold is yet hidden in it: though one ſhould not think it, in regard that it is ſo faire, bright and cleer; which for all that may be obſerved by this, that when you melt it in a clean covered crucible or pot, and poure it afterward in a clean Copper morter or baſon (being firſt made warm) you get a purple coloured ſalt, whereof 6. 9. 12. to 24. grains given in, doth cleanſe and purge the ſtomach and bowels, and eſpecially it is uſeful in feavers and other diſeaſes of the ſtomach. But in the crucible, out of which the ſalt hath been poured, you will finde an earthy ſubſtance, which hath ſeparated it ſelf from the ſalt, and looketh yellowiſh; this being taken out and melted in a little crucible by a ſtrong fire, turneth to a yellow glaſs, which is impregnated with the Tincture of Gold, and doth yeeld a corn (or grain) of ſilver in every regard like unto common cupellated ſilver, wherein no gold is found, which is to be admired: becauſe that all Chymiſts are of opinion, that no *Aqua regia* can diſſolve ſilver, which is true. The queſtion therefore is from whence or how this ſilver came into the ſalt ſince no *Aqua Regia* doth diſſolve ſilver? whereupon ſome perchance may anſwer, that it muſt have been in the oyle of Tartar, in regard that many do believe, that the ſalts likewiſe may be turned into metals, which I do not gainſay but only deny that it could have been done here; for if that ſilver had been exiſtent in the *Aqua Regia* or ſalt of Tartar (whereas *Aqua Regia* cannot bear any) it would have been precipitated together with the gold. But that it was no common ſilver, but gold which turned to ſilver after it was deprived of its Tincture, I ſhall briefly endeavor to prove. For that ſalt-waters (of *Aqua Regia* and ſalt of Tartar) out of which the gold hath been precipitated, is of that nature, before it be coagulated to ſalt, though it be quite clear and white, that if you put a feather in it, it will be dyed purple within few dayes, which purple colour comes from the gold, and not from ſilver; in regard that ſilver doth dye red or black: and hence it appeareth, that the ſalt water hath retained ſomething of gold.

Now ſome body peradventure may ask: if that the ſaid ſalt water hath retained ſome gold, how is it then, that in the melting no gold comes forth, but only ſilver? To which I anſwer that ſome ſalts are of that nature, that in the melting they take from the gold its colour and ſoule; whereof if the gold be truly deprived, it is then no more gold nor can be ſuch; neither is it ſilver, but remaineth onely a volatile black body, good for nothing, which alſo proveth much more unfixt then common lead, not able to endure any force of fire, much leſs the cupel: But like *Mercury* or *Arſenicum* vaniſheth (or flyeth away) by a ſmall heat. Hence it may be gathered, that the fixedneſs (or fixity) of gold doth conſiſt in its ſoul or Tincture, and not in its body, and therefore it is credible, that gold may be anatomized, its beſt or purer part ſeparated from the groſſer (or courſer) and ſo that a Tingent medicine (or Tincture) may be made of it. But whether this be the right way, whereby the univerſal medicine of the ancient Philoſophers (by whoſe means all metals can be changed or tranſmuted into gold) is to be attained unto, I will not diſpute; yet I believe that peradventure there may be another ſubject, endued with a far higher Tincture then gold is, which obtained no more from nature, then it doth need it ſelf for its own fixedneſs. However, we may ſafely beleeve, that a true Anima or Tincture of gold, if it be well ſeparated from its impure black body, may be exalted and improved in colour; ſo that afterwards of an imperfect body a greater quantity, then that was from which it was abſtracted, may be improved and brought to the perfection of gold. But waving all this, it is true and certain, that if the gold be deprived of its Tincture, the remaining body can no more be gold; as is demonſtrated more at large in my treatiſe (*de Auro potabili vero*) of the true potable Gold: And this I mentioned here onely therefore, that in caſe the lover of this Art, in his work ſhould meet perchance with ſuch a white corne, he may know, from whence it doth proceed.

I could have forborne to ſet down the preparation of the fulminating gold, and ſo ſave paper and time, in regard that it is deſcribed by others: but becauſe I promiſed in the firſt part to teach how to make the flores of gold, and that thoſe are to be made out of fulminating (or thundring) gold, I thought it not amiſs to deſcribe its preparation, that the lover of this Art need not firſt have his recourſe to another book for to finde out the preparation, but by this my book may be furniſhed with a perfect inſtruction for the making of the flores of gold, and this is the common way for to make *Aurum fulminans*, known unto moſt Chymiſts; but in regard that eaſily an error may be committed in it, either by pouring on too much of the liquor of Tartar (eſpecially when it is not pure enough, ſo that not all the gold doth precipitate, but part of it remaineth in the ſolution, whereby you would have loſs ; or elſe, the gold falling or precipitating into a heavy calx, which doth not fulminate well,and is unfit for to be ſublimed into flores.

Therefore I will here ſet down another and much better way, whereby the gold can be precipitated quite and clean out of the *Aqua Regia* without the leaſt loſs, and ſo that it cometh to be very light and yellow, and doth fulminate twice as ſtrong as the former, and there is no other difference between this and the former preparation, but only that in ſteed of the oyle of Tartar, you take the ſpirit of urine or of Salt Armoniack for to precipitate the diſſolved gold thereby ; and the gold (as before ſaid) will be precipitated much purer, then it is done by the liquor of the ſalt of Tartar, and being precipitated, it is to be edulcorated and dryed, as above in the firſt preparation hath been taught.

The uſe of *Aurum fulminans.*

THere is little to write of the uſe of *Aurum fulminans* in phyſick ; for becauſe it is not unlockt, but is onely a groſs calx and not acceptable to the nature of man, it can do no miracle. And although it be uſed to be given *per ſe* from 6. 8 12. grains to ℈ i. for to provoke ſweating in the plague, and other malignant feavers, yet it would never ſucceed ſo well as was expected. Some have mixed it with the like weight of common ſulphur, and made it red hot (or calcined it) whereby they deprived it of its fulminating vertue, ſuppoſing thus to get a better medicine, but all in vaine, for the gold calx would not be amended by ſuch a groſs preparation. But how to prepare a good medicine out of *Aurum fulminans*, ſo that it may be evidently ſeen, that the gold is no dead body nor unfit for phyſick, but that it may be made quick and fit for to put forth or ſhew forth thoſe vertues which it pleaſed God to treaſure up in it, I ſhall briefly diſcover it here.

Firſt get ſuch an inſtrument (as above hath been taught) made for you out of Copper, bnt not too big, nor with a lid at the top, but only with a pipe, unto which a receiver may be applyed, which muſt not be luted to it, but it ſufficeth, that the pipe enter far into the belly of the receiver; and at the lower part it muſt have a flat bottome, that it may be able to ſtand: over the bottome there muſt be a little hole with a little door, that cloſeth very exactly: and there muſt be alſo two little plates or ſcales of ſilver or copper, as big as the naile of ones finger, whereupon the *Aurum fulminans* is to be ſet into the the Inſtrument; which is to ſtand upon a Trevet, under which you are to lay ſome burning coals for to warm or heat the bottom withal. The Inſtrument together with the glaſs receiver being ſo ordered, that it ſtands faſt, and alſo the bottom thereof being warmed or heated, then with little pinſers one of the little ſcales, containing 2, 3. or 4. grains of *Aurum fulminans* muſt be conveighed into the Inſtrument & ſet upon the warm bottom, and then ſhut the little door, and when the gold doth feel the heat, it kindleth and giveth a clap, and there is cauſed a ſeparation and eſpecial unlocking of the gold; for as ſoon as the clap is done, the gold doth go through the pipe like a purple coloured ſmoak into the receiver, and ſticks on every where like a purple coloured powder. When the ſmoak is vaniſhed, which is ſoon done, then take the empty ſcale out of the Inſtrument or Oven, and ſet in the other with the gold which will likewiſe fulminate and yeild its flores, Then the firſt being cooled in the mean time, is to be filled again and put in, in ſtead of that which is empty, and ſo forth; putting in one ſcale after another by turns, continue it ſo long till you have got flores enough: After the ſublimation is performed, let the Copper veſſel grow coole, and then ſweep or bruſh the gold-powder which is not ſublimed with a haires foot or a gooſe feather out of the veſſel, which powder ſerveth for nothing, but to be melted with a little borras, and it wil be good gold again, but onely ſomwhat paler then it was before it was made into fulminating gold. But the flores in the receiver cannot be bruſhed out thus, eſpecially when they are caſt in with an addition of ſalt Nitre, as by the flores of ſilver hereafter ſhall be taught, becauſe they are ſomething moiſt, and therefore poure in as much of dephlegmed Tartariſed ſpirit of wine unto it, as you think it to be enough, for to waſh off the flores with. This done, pour out the ſpirit of wine, together with the burnt Phœnix into a clean glaſs, with a long neck, ſet it (being well luted firſt) into a gentle Balneum, or into warm aſhes for ſome dayes, and the ſpirit of wine in the mean time will be coloured with a faire red, which you muſt poure off and then poure on other freſh ſpirit & ſet it in a warm place for to be diſſolved, this being likewiſe coloured, put both the extracts together in a little glaſs body, and abſtract the ſpirit of wine (in Balneo) from the Tincture, which will be little in quantity, but of a high red colour and pleaſant in taſte. The remaining flores from which the Tincture is extracted, may be with water waſhed out of the glaſs, and then dryed if they are to be melted; and they will yeild a little pale gold, and the moſt part turneth into a brown glaſs, out of which perchance ſomething elſe that is good may be made, but unknown to mee as yet.

N.B. If you mixe the *Aurum fulminans* with ſome ſalt nitre, before fulmination, then the flores will be the more ſoluble, ſo that they yeeld their Tincture ſooner and more freely, then alone of themſelves; and if you pleaſe, you may adde thereto thrice as much ſalt nitre, and ſo ſublime them in flores, in the ſame manner, as ſhall be taught for the making of the flores of ſilver.

The uſe of the Tincture *of Gold.*

THe extracted Tincture is one of the chiefeſt of thoſe medicines, which comfort and cheer up the heart of man, renew and reſtore to youthfulneſs, and cleanſe the impure blood in the whole body, whereby many horrible diſeaſes, as the leproſie, the pox, and the like may be rooted out.

But whether this Tincture by the help of fire may be further advanced into a fixed ſubſtance I do not know: for I have not proceeded further in it, then here is mentioned.

Of the flores of ſilver and of its medicine.

HAving promiſed in the firſt part of this book (when I was deſcribing the preparation of flores out of Metals) to teach in the ſecond part to make the flores of gold and ſilver, thoſe of gold being diſpatcht; there followeth now in order after the gold, to ſpeak alſo of ſilver and of its preparation, which is to be thus performed.

Take of thin laminated or ſmal granulated fine ſilver as much as you pleaſe, put it into a little ſeparating glaſs body, and poure upon it twice as much in weight of rectified ſpirit of ſalt nitre, and the ſpirit of ſalt nitre will preſently begin to work upon the ſilver and to diſſolve it. But when it will not diſſolve any more in the cold, then you muſt put the glaſs body into warm ſand or aſhes, and the water wil preſently begin to work again; let the glaſs ſtand in the warm aſhes, untill all the ſilver be diſſolved. Then put the ſolution out of the little glaſs body, into another ſuch as is cut off at the top, and put on a little head or Limbeck, and in ſand abſtract the moity of the ſpirit of ſalt nitre from the diſſolved ſilver; then let the glaſs body remaine in the ſand till it be coole; after take it out, and let it reſt for a day and a night, and the ſilver will turn into white foliated cryſtals, from which you muſt poure off the remaining ſolution which is not turned; and from thence abſtract again the moity of the ſpirit, and let it ſhoote or turn in a cold place; and this abſtracting and cryſtalliſing you are to reiterate, until almoſt all the ſilver is turned to Cryſtals; which you muſt take out and lay them upon filtring paper for to dry, and ſo keep it for ſuch further uſe, as hereafter ſhall be taught. The remaining ſolution, which is not cryſtalliſed, you may in a copper veſſel by adding of ſweet water thereto, precipitate over the fire into a calx, and then edulcorate and dry it, and keep it for other uſe, or elſe melt it again into a body. Or elſe you may precipitate the ſame with ſalt water, and ſo edulcorate and dry it; and you will have a calx, which doth melt by a gentle fire, and is of a ſpecial nature, in the ſpirit of urine, of ſalt Armoniack, of Hartſhorn, of Amber, of ſoot, and of haire it doth eaſily diſſolve; and it may be prepared or turned into good medicines, as ſhortly in our treating of the ſpirit of urine ſhall be taught. Or elſe, you may chooſe not to precipitate the remaining ſolution of ſilver, but with the ſpirit of urine to extract an excellent Tincture, as hereafter ſhall be taught.

Of the uſe of the cryſtals of ſilver.

These cryſtals may ſafely be uſed in Phyſick alone by themſelves 3. 6. 9. 12. grains thereof being mixed with a little ſugar, or elſe made up into pils; they do purge very gently and without danger; but by reaſon of their bitterneſs they are ſomewhat untoothſome to take; alſo, if they be not made up into pils, they colour the lips, tongue and mouth quite black (but the reaſon of that blackneſs belongeth not to this place to treat of, but ſhall by and by follow hereafter) Alſo if they touch metals, as Silver, Copper and Tin, they make them black and ugly, and therefore they are not much uſed. But if you put into the ſolution of ſilver (before it be reduced into Cryſtals) halfe as much quickſilver as there was of the ſilver, and ſo diſſolve them together and afterwards let them ſhoote together, there will come forth very faire little ſquare ſtones like unto Allome, which do not melt in the aire, as the former foliated ones uſe to do; neither are ſo bitter, and they purge alſo quicker and better, then thoſe that are made onely of ſilver.

How to ſublime the Cryſtals of ſilver into flores, and then to make a good Medicine of the flores.

TAke of the foliated Cryſtals of Silver as many as you pleaſe, and upon a grinding ſtone made warm firſt, grinde as much purified and wel dryed ſalt nitre amongſt it, and lay it into your Iron diſtilling veſſel (to the pipe whereof there is to be applyed and luted a great receiver) coles made into powder two inches high, and make a fire under it, that the veſſel every where together with the coles that are in it, become red hot. Then take off the lid, and with a ladle throw in at once of your Cryſtals of ſilver ʒ i. yea more or leſs, according as you think that your receiver in regard of its bigneſs is able to bear. This done, preſently put on the lid, and the ſalt nitre together with the cryſtals of ſilver will be kindled by the coles that lye on the bottome of the veſſel, and there will come forth a white ſilver fume through the pipe into the receiver, and after a while when the cloud is vaniſhed in the receiver, caſt in more, and continue this ſo long, until all your prepared ſilver is caſt in; then let it coole, and take off the receiver, and poure into it good Alcolized ſpirit of wine, and waſh the flores with it out of the receiver, and proceed further with them, as above you have been taught to proceed with the gold, and you will get a greeniſh liquor, which is very good for the braine.

Take the coles out of the diſtilling veſſel, and make them into fine powder, and waſh them out with water, to the end that the light cole-duſt may be got from it, and you will finde much ſilver duſt (or a great many little ſilver graines) which the ſalt nitre could not force over, which you may reduce, for it will be good ſilver.

There can alſo be made a very good medicine out of the cryſtals of ſilver, which will be little inferior to the former, whereby the diſeaſes and infirmities of the braine may be very well remedied, which is done thus:

How

How to make a green oyle out of ſilver.

POure upon Cryſtals of ſilver twice or thrice as much (in weight) of the ſtrongeſt ſpirit of ſalt Armoniack, put it in a glaſs with a long neck well cloſed, into a very gentle warmth for the ſpace of 8. or 14, dayes in digeſtion, and the ſpirit of ſalt Armoniack will be tinged with a very faire blew colour from the ſilver, then pour it off, and filtre it through brown paper, and then put it in a little glaſs retort or glaſs body, and abſtract in Balneo by a gentle fire, almoſt all the ſpirit of ſalt Armoniack (which is ſtill good for uſe) and there will remaine in the bottom a graſs green liquor, which is to be kept for a medicine.

But in caſe, that you ſhould miſs, and abſtract too much of the ſpirit from the Tincture of ſilver, ſo that the Tincture be quite dry, and turned to a green ſalt, then you muſt poure upon it again as much of the ſpirit of ſalt Armoniack, as will diſſolve the green ſalt again to a green liquor, but if you deſire to have the Tincture purer yet, then abſtract all moyſtneſs from it, to a ſtony dryneſs: upon which you muſt poure good ſpirit of wine, which will quickly diſſolve the ſtone, and then filtre it, and there will remaine fæces, and the Tincture will be fairer: from which you muſt abſtract moſt of the ſpirit of wine, and the Tincture will be ſo much the higher in vertue. But if you pleaſe, you may diſtill that green ſalt or ſtone (before it be extracted once again with ſpirit of wine) in a little glaſs-retort, and you will get a ſubtile ſpirit and a ſharp oyle, and in the bottome of the retort there remaineth a very fuſile ſilver which could not come over.

It is to be admired, that when you pour ſpirit of ſalt Armoniack or ſpirit of wine upon that ſtone for to diſſolve it, that the glaſs comes to be ſo cold by it,that you hardly are able to endure it in your hand, which coldneſs in my opinion cometh from the ſilver (being ſo well unlockt) which naturally is cold.

The uſe of the green liquor in Alchymy, and for Mechanical operations.

THis green liquor ſerveth not only for a medicine, but alſo for other Chymical operations (for both Copper and glaſs may be eaſily and very fairly ſilvered over therewith) very uſeful for thoſe that are curious and love to make a ſhew with fair houſhold-ſtuff; for if you get diſhes, trencher plates, ſalters, cups and other veſſels made of glaſs, after the ſame faſhion as thoſe of ſilver uſe to be made, you may very eaſily and without any conſiderable charge ſilver them over therewith within and without, ſo that by the eye they cannot be diſcerned from true ſilver plate.

Beſides the above related good medicines, there may be made an other and eſpecial good one out of the cryſtals of ſilver, *viz.* diſſolving and digeſting them (for a ſpace of time) with the univerſal water, which hath been diſtilled by nature it ſelf; and is known to every body: and after its digeſting for a ſhort time, and change into ſeveral colours, there will be found a pleaſant eſſence, which is not ſo bitter as the above deſcribed green liquor, which is not brought yet by heat to ripeneſſe and maturation.

N. B. In this ſweet univerſal Menſtruum, there can alſo all other metals by a ſmall heat and the digeſtion of a long time be ripened and fitted for medicines (having firſt been reduced into their vitriols and ſalts) and then they are no more dead bodies, but by this preparation have recovered a new life, and are no more the metals of the covetous, but may be called, the metals of the Philoſophers and of the Phyſitians.

Beſides Phyſick or phyſical uſe.

LAſtly there may be many pretty things more effected (beſides the medicinal uſe) by means of the Cryſtals of ſilver, *viz.* when you diſſolve them in ordinary ſweet raine water, you can dye beards, haire, skin, and nailes of men or beaſts into carnation or pinck red, brown & black according as you have put more or leſs thereof in the water; or elſe, according as the haire was more or leſs times wetted therewith, whereby the aſpect of man and beaſt (which ſometimes in ſeveral occaſions may not be contemned) is changed, ſo that they cannot be known.

This colouring or dye may be alſo performed with Lead or Mercury no leſs then with ſilver, but otherwiſe prepared, whereof in the fourth part.

Now I have taught how to make flores and tinctures of gold and ſilver by the help of the acid ſpirit of Nitre. There may be many other medicines taught to be made out of them, but in regard that they belong not to this place, they ſhall be reſerved for other places of this ſecond, and alſo for the other following parts.

As by the help of the ſpirit of Nitre good medicines can be made out of gold and ſilver; ſo the like may be done out of other inferiour metals. But in regard that their deſcription is fitter for other places of this book, I do omit them here. Yet neverthe leſs I thought good, to deſcribe one preparation of every metal, and after the ſilver there followeth now the copper.

A medicine out of copper externally to be uſed.

DIſſolve burnt plates of copper in ſpirit of ſalt, and abſtract the ſpirit again from thence to a dryneſs, but not too hard, and there will a green maſs remaine behinde, which you may caſt in by little and little, and ſo diſtil it, as of ſilver hath been taught. It doth yeild a ſtrong and powerful ſpirit and flores alſo for outward uſe in putrid wounds to lay a good ground thereby for the healing.

A medicine out of iron or ſteel.

IN the ſame manner you may proceed with iron and ſteel, and there will remaine behinde a good crocus of a great ſtipticity or aſtringency, eſpecially out of iron or ſteele, and may with good ſucceſs be mixed with oyntments and plaſters.

Of Tin and Lead.

IF Tin or Lead be diſſolved therein, after the abſtracting of part of the ſpirit, they will ſhoote into cleer and ſweet cryſtals. But Tin is not ſo eaſily diſſolved as lead; both may ſafely be uſed for medicines. Alſo there may be ſpirits and flores got out of them by diſtilling. The rehearſing of the preparation is needleſs, for what for the preparing of ſilver hath been taught, is to be underſtood alſo of other metals.

The uſe of the cryſtals of Lead and Tin.

THe cryſtals of lead are admirably good to be uſed in the plague for to provoke ſweating and expel the venome out of the body; they may alſo with credit be uſed in the bloody flux. Externally diſſolved in water, and clothes dipt therein and applyed they excellently coole and quench all inflamations, in what part of the body ſo ever they do befall. Likewiſe the ſpirit thereof uſed *per ſe* (and the flores mixed among oyntments) do their part ſufficiently.

But the cryſtals of Tin do not prove altogether ſo quick in operation, though they do act their part alſo, & they are more pleaſant then thoſe that are made of Lead; for in Tin there is found a pure ſulphur of gold; but in Lead a white ſulphur of ſilver, as is proved in my *Treatiſe of the Generation and nature of metals.*

Of Mercury.

WHen you diſſolve common Mercury in rectified ſpirit of Nitre, and abſtract the ſpirit from it again, then there will remaine behinde a faire red gliſtering precipitate; but when the ſpirit is not rectified, it will not be ſo faire, becauſe that the impurity of the ſpirit remains with the Mercury and pollutes it. This calcinated Mercury is called by ſome *Mercurius præcipitatus*, and by others *Turbith minerale*, wherewith the Surgeons and ſomtimes one or other unskilful Phyſitians do cure the pox; they do give at once 6. 8. 10. graines (more or leſs) according to its preparation and force in operation to the patient; for if the ſpirit be not too much abſtructed from it, it worketh much ſtronger, then when by a ſtrong fire it is quite ſeparated from it; for the ſpirits that remaine with the Mercury make it quick and active which elſe without the ſpirits would not be ſuch.

The other metals alſo, if they be not firſt made ſoluble by ſalts or ſpirits, can perform either none or but very ſmal operation, unleſs it be Zinck or Iron, which being eaſily ſoluble are able to work without any foregoing diſſolution, as hath been ſhewn above, when we treated of the oyle of vitriol. But that the ſharp ſpirits are the cauſe of that operation, may hence be perceived and made manifeſt; that although you take ℥ß. of quick-ſilver and pour it down into the ſtomach, yet it would run out again beneath, as above it was poured in. But if it be prepared with the ſpirits or ſalts, then but few graines of it will work ſtrongly, and the more it is made ſoluble, the ſtronger it worketh, as you may ſee when it is ſublimed from ſalt and vitriol, that it groweth ſo ſtrong thereby that one graine doth work more then eight or ten grains of Turbith Mineral, and three or four grains thereof would kill a man by reaſon of its mighty ſtrength. Alſo it worketh extreamly and much more then the ſublimate, when it is diſſolved in ſpirit of Nitre and cryſtalliſed, ſo that you cannot well take it upon your tongue without danger. Which ſome perceiving, evaporate the *Aqua fortis* by a gentle heat from it, ſo that the *Mercurius* remained yellow, which in a ſmaler doſe wrought more then the red, from which the ſpirits were quite evaporated. And they uſed it not only externally ſtrewing it into impure ſores, for to corrode or fret away the proud fleſh, not without great paine to the patient: but alſo withont diſtinction of young or old gave it inwardly for to purge; which is one of the moſt hurtful purges that can be uſed. For this evil gueſt, however he be prepared, cannot leave his tricks, unleſs it be reduced into ſuch a ſubſtance, as that it never can be brought back to a running Mercury, for then much good can be done therewith in phyſick without any hurt or prejudice to the health of man, whereof perchance ſomething more ſhall be ſaid in another place.

I cannot omit for the benefit of young innocent children, to diſcover a great abuſe. For it is grown very common almoſt among all that deale in phyſick, that as ſoon as a little childe is not well before they know whether it will be troubled with wormes or with any thing elſe, they preſently fall upon Mercury, ſuppoſing that in regard it hath no taſte, it be ſo much the better for to get the children to take it for to kill the wormes.

But thoſe men do not know the hurtful nature of it, which it doth ſhew againſt the ſinews and nerves: For ſome are of opinion, that if they know to prepare Mercury ſo, that it can be given in a greater doſe (as is to be ſeen in ſublimed *Mercurius dulcis*) that then it is excellently prepared: but they are in a great error, and it were much better, it were not ſo well prepared, that the leſs hurt might be done to man, in regard that then they durſt not give it in ſo great a doſe. For if that which is prepared with *Aqua fortis* or ſpirit of ſalt nitre be uſed in the pox to men that are advanced in years, it cannot do ſo much hurt, becauſe it is given in a ſmall doſe, and doth work with them, whereby nature gets help for to overcome and expel that hurtful venome, and its malignity is abated by the ſtrong ſalivation, which the provident nature hath planted in it, ſo that not ſo much miſchief can come by it, as by *Mercurius dulcis*, whereof is given to little weak children from ten to thirty graines at once, which commonly (unleſs they be of a ſtrong nature, and do grow it out) doth cauſe a weakneſs and lameneſs in their limbs, ſo that (if they do not come to be quite lame at laſt) they have a long time to ſtruggle withal, till they overcome it.

In like manner thoſe alſo do err, which do ſhake Mercury in water or beer ſo long until the water come to be gray-coloured, and ſo give that water or beer to little children to drink for the wormes, pretending that they do not give the ſubſtance or body of Mercury, but onely its vertue. But this groſs preparation is no better then if they had miniſtred the running Mercury it ſelf. Neither have I ever ſeen, that the uſe of *Mercurius dulcis* or of the gray coloured water was ſeconded with good ſucceſs in killing of the worms. But it is credible, that it may be done by yellow or red precipitate, in regard of its ſtrong operation. But who would be ſuch an enemy to his childe, as to plague and torture it with ſuch a hurtfull and murthering medicine; eſpecially there being other medicines to be had, which do no harme to the children, as is to be found by iron or ſteel, and the ſweet oyle of vitriol.

And ſo much of the abuſe of Mercury: I hope it will be a good warning unto many, ſo that they will not ſo eaſily billet ſuch a tyrannical gueſt in any ones houſe, whereby the ruine thereof of neceſſity muſt follow. And that cure deſerveth no praiſe at all, whereby one member is cured with the hurt of two or three other members. As we ſee by the pox, when one infected member is cured by Mercury, and that but half and not firme at all, that all the reſt of the body is endangered thereby for the future. And therefore it would be much better that ſuch crude horſe-phyſick might be ſevered from good medicaments, & ſuch uſed inſtead of them, as may firmely, ſafely, and without prejudice to other parts perform the cure of which kinde ſeveral are taught in this book. But in caſe that you have patients, which have been ſpoyled by ſuch an ill-prepared Mercury, then there is no better remedy to reſtore them, then by medicines made of metals, wherewith Mercury hath great affinity, as of gold and ſilver: for when they are often uſed, they attract the Mercury out of all the members, and carry it along with them out of the body, and ſo do rid the body thereof. But externally the precipitated Mercury may more ſafely be uſed, then internally, in caſe there be nothing elſe to be had, *viz.* to corrode or eat away the proud fleſh out of the wound. But if in ſtead of it there ſhould be uſed the corroſive oyle of Antimony, Vitriol, Allom or common ſalt it would be better, and the cure much the ſpeedier, and it would be better yet, that in the beginning good medicaments were uſed to freſh wounds, and not by carleſneſs to reduce them to that ill condition, that afterwards by paineful corroſives they muſt be taken away. But ſuch a Mercury would ſerve beſt of all for ſouldiers, beggers and children that go to ſchoole, for if it be ſtrewed upon the head of children, or into their clothes, no louſe will abide there any longer. In which caſe Mercury muſt by his preparation not be made red, but onely yellow, and it muſt be uſed warily, and not be ſtrewed on too thick, leſt the fleſh be corroded, which would be the occaſion of great miſchief.

Of Aqua fortis.

OUt of Salt nitre and vitriol, taking of each a like quantity, or (if the water is to be not altogether ſo ſtrong) two parts of vitriol to one part of ſalt nitre, a water diſtilled is good to diſſolve metals therewith, and to ſeparate them from one another; as gold from ſilver and ſilver from gold, which in the fourth part punctually ſhall be taught.

The *Aqua fortis* ſerveth alſo for many other Chymical operations to diſſolve and fit metals thereby, that they may be reduced the eaſier into medicaments: but becauſe the ſpirit of ſalt nitre and the *Aqua fortis* are almoſt all one and have like operations: for if the *Aqua fortis* be dephlegmed and rectified, you may perform the ſame operations with it, which poſſibly may be performed with the ſpirit of ſalt nitre; and on the other ſide the ſpirit of ſalt nitre will do all that can be done with the *Aqua fortis*, whereof in the fourth part ſhall be ſpoken more at large.

Now I know well that ignorant laborators (which do all their work according to cuſtome, without diving any further into the nature of things, will count me an Heretick (becauſe I teach, that the *Aqua fortis* made of vitriol and ſalt nitre is of the ſame nature and condition with the ſpirit of ſalt nitre, which is made without vitriol) ſaying that the *Aqua fortis* doth partake likewiſe of the ſpirit of vitriol, becauſe vitriol alſo is uſed in the preparation of it. To which I anſwer, that although vitriol be uſed in the preparation of it, yet for all that in the diſtilling, nothing or but very little of its ſpirit comes over with the ſpirit of ſalt nitre, and that by ſo ſmall a heat it cannot riſe ſo high, as the ſpirit of ſalt nitre doth: and the vitriol is added onely therefore unto the ſalt nitre, that he may hinder its melting together, and ſo the more facilitate its going into a ſpirit. And for the more to be convinced of this truth, the unbelieving may adde to ſuch ſpirit of ſalt nitre, as is made by it ſelf, a little of oyle of vitriol likewiſe made by it ſelf, and try to diſſolve ſilver gilded with it, and he will finde that his ſpirit of ſalt nitre by the ſpirit of vitriol is made unfit to make a ſeparation; for it preyeth notably upon the gold, which is not done by *Aqua fortis*.

Of the ſulphurized ſpirit of ſalt nitre.

THere can alſo be made a ſpirit of ſalt nitre with ſulphur, which is ſtill in uſe with many, *viz.* that they take a ſtrong earthen retort, which hath a pipe at the top, and faſten it into a furnace, and having put ſalt nitre in it, they let it melt, and then through the pipe they throw peeces of ſulphur of the bigneſs of a pea one after another, which being kindled, together with the nitre doth yield a ſpirit called by ſome ſpirit of ſalt nitre, and by others oyle of ſulphur, but falſely; for it is neither of both, in regard that metals cannot be diſſolved therewith as they are done with other ſpirit of ſalt nitre or ſulphur; neither is there any great uſe for it in phyſick, and if it were good for any Chymical operations, by the help of my diſtilling inſtrument might eaſily be made and in great quantity.

N.B. But if ſalt nitre be mixed with ſulphur in due proportion, and in the firſt furnace be caſt upon quick coles, then all will be burnt, and a ſtrong ſpirit cometh over, whoſe vertue is needleſs here to deſcribe; but more ſhall be mentioned of it in another place.

Of the Cliſſus.

AMong the Phyſitians of this latter age, there is mention made of another ſpirit, which they make of Antimony, Sulphur, and ſalt nitre, a like quantity taken of each, which they call *Cliſſus*, and which they have in high eſteem, and not without cauſe, becauſe it can do much good, if it be well prepared.

The inventor for the making thereof uſed a retort with a pipe, as was mentioned by the ſulphurized ſpirit of ſalt nitre, through which pipe he threw in his mixture. And it is a good way if no better be known: but if the Author had known my invention and way of diſtilling, I doubt not but he would have ſet aſide his, that hath a noſe or pipe retort, and made uſe of mine.

The materials indeed are good, but not the weight or proportion; for to what purpoſe ſo great a quantity of ſulphur, it being not able to burn away all with ſo ſmal a quantity of ſalt nitre. And if it doth not burn away, but only ſublime and ſtop the neck of the retort, whereby the diſtillation is hindred, how can it then yeeld any vertue? Therefore you ought to take not ſo much ſulphur, but only ſuch a quantity as will ſerve to kindle the ſalt nitre, *viz.* to ℔ i. of ſalt nitre four drams of ſulphur: but becauſe Antimony alſo is one of the ingredients, which hath likewiſe much ſulphur (for there is no Antimony ſo pure, but it containeth much combuſtible ſulphur, as in the fourth part of this book ſhal be proved:) therefore it is needleſs to add ſo much ſulphur unto Antimonie, to make it burn, becauſe it hath enough of it ſelf. And therefore I will ſet down my compoſition, which I found to be better then the firſt.

Take Antimony ℔ i. ſalt nitre ℔ ij. ſulphur ℥ iij. the materials muſt be made into ſmal powder and well mixed, and at once caſt in ℥ ij. thereof, and there will come over a ſulphureous acid ſpirit of Antimony, which will mix it ſelf with the water, which hath been put before in the receiver; which after the diſtillation is finiſhed muſt be taken out and kept cloſe for its uſe. It is a very good diaphoretick (or ſweat-provoking) medicine eſpecially in feavers, the plague, epilepſie, and all other diſeaſes, whoſe cure muſt be performed by ſweating. The *Caput Mortuum* may be ſublimed into flores in that furnace, which is deſcribed in the firſt part.

Of the Tartariſed ſpirit of nitre.

IN the very ſame manner there may alſo be diſtilled a good ſweat-provoking ſpirit out of ſalt nitre and Tartar, a like quantity taken of each, which is very good to be uſed in the plague and malignant feavers.

The *Caput Mortuum* is a good melting powder for to reduce the calxes of metals therewith; or elſe you may let it diſſolve in a moyſt place to oyle of Tartar.

Of the Tartariſed ſpirit of Antimony.

A Much better ſpirit yet may be made of Tartar, ſalt nitre, and Antimony, a like quantity being taken of each and made into fine powder, and mixed well together, which though it be not ſo pleaſant to take, is therefore not to be deſpiſed. For not only in the plague and feavers, but alſo in all obſtructions and corruptions of blood it may be uſed with admiration of its ſpeedy help.

The *Caput Mortuum* may be taken out, and melted in a crucible, and it will yeeld a *Regulus*, the uſe whereof is deſcribed in the fourth part. Out of the ſcoria or droſs a red Tincture may be extracted with ſpirit of wine, which is very uſeful in many diſeaſes. But before you extract with ſpirit of wine, you may get a red lixivium out of it with ſweet water, which lixivium may be uſed externally for to mend the faults of the skin and to free it from ſcabbineſs.

Upon this lixivium if you poure Vinegar or any other acid ſpirit, there will precipitate a red pouder, which if it be edulcorated and dryed, can be uſed in phyſick. It is called by ſome Tartar *auratum diaphoreticum*: but it is no Diaphoretick, but maketh ſtrong vomits, and ſo in caſe of neceſſity, when you have no better medicine at hand, it may be uſed for a vomitory from 6. 7. 9. to 15. grains.

Alſo out of the ſcoria there can be extracted a faire Sulphur with the ſpirit of urine and diſtilled over the Limbeck, which is very good for all diſeaſes of the lungs.

Of Stone-coles.

IF you mixe ſtone-coles with a like quantity of ſalt nitre, and diſtill them, you will get an admirable ſpirit and good to be uſed for external ſores; for it cleanſeth and draweth the wounds together exceedingly, and there will alſo come over a metallical vertue in the form of a red powder, which muſt be ſeparated from the ſpirit, and kept for its uſe. But if you caſt in ſtone-coles alone by themſelves, and diſtill them, there will come over not only a ſharp ſpirit, but alſo a hot and blood red oyle, which doth powerfully dry and heal all running ulcers; eſpecially it will heal a ſcald-head better then any other medicine, and it doth conſume alſo all moyſt and ſpongious excreſcencies in the skin, where ever they be: but if you ſublime ſtone-coles in the furnace deſcribed in the firſt part, there comes over an acid metallical ſpirit, and a great deale of black light flores, which ſuddenly ſtanch bleeding, and uſed in plaſters, are as good as other metallical flores.

Of the Sulphreous ſpirit of ſalt nitre or Aqua fortis.

IF you take one part of ſulphur, two parts of ſalt nitre, and three parts of vitriol, and diſtill them, you will get a graduating *Aqua fortis*, which ſmelleth ſtrongly of ſulphur; for the ſulphur is made volatil by the ſalt nitre and vitriol. It is better for ſeparating of metals, then the common *Aqua fortis*.

If ſilver be put in, it groweth black, but not fixed; ſome of it poured into a ſolution of ſilver a great deal of black calx will precipitate, but doth not abide the tryal. You may alſo abſtract a ſtrong *ſulphureous* volatile ſpirit from it, which hath like vertue as well internally as externally for bathes, and may be uſed like unto a volatile ſpirit of Vitriol or Allome.

Of the Nitrous ſpirit of Arſenick.

IF you take white Arſenick and pure ſalt nitre of each a a like quantity ground into fine powder, and diſtill them, you will get a blew ſpirit, which is very ſtrong, but no water muſt be put into the receiver, elſe it would turn white, for Arſenick, from which the blew cometh, is precipitated by the water. This ſpirit diſſolveth aud graduateth the copper as white as ſilver, and maketh it malleable but not fix. The remaining *Caput Mortuum* maketh the copper white, if it be cemented therewith, but very brittle and unmalleable, but how to get good ſilver out of Arſenick and with profit, you ſhall finde in the fourth part. In phyſick the blew ſpirit ſerveth for all corroding cancrous ſores, which if they be anoynted therewith, will be killed thereby, and made fit for healing.

To make a ſpirit of Sulphur, crude Tartar and Salt nitre.

IF you grinde together one part of Sulphur, two parts of Crude Tartar, and four parts of ſalt nitre, and diſtill it Philoſopher-like, you will get a moſt admirable ſpirit, which can play his part both in Phyſick and Alchymie. I will not adviſe any body to diſtill it in a retort; for this mixture, if it groweth warm from beneath, it fulminateth like gunpowder; but if it be kindled from above, it doth not fulminate, but onely burneth away like a quick fire: metals may be melted and reduced thereby.

To make a ſpirit out of Salt of Tartar, Sulphur, and Salt-nitre.

IF you take one part of ſalt of Tartar, and one part and half of Sulphur, with three parts of ſalt-nitre, and grinde them together, you will have a compoſition, which fulminateh nateth like *Aurum fulminans*, and the ſame alſo (after the ſame manner as above hath been taught with the gold) can be diſtilled into flores and ſpirits, which are not without ſpeciall vertue and operation. For the corruption of one thing is the generation of another.

How to make a ſpirit of ſaw duſt, ſulphur and ſalt nitre.

IF you make a mixture of one part of Saw-duſt made of Tilia or Linden-wood, and two parts of good ſulphur, and nine parts of purified and well dryed ſalt nitre, and caſt it in by little and little, there will come over an acid ſpirit, which may be uſed outwardly, for to cleanſe wounds that are unclean. But if you mix with this compoſition minerals or metals made into fine powder, and then caſt it in and diſtill it, there will come not only a powerful metallical ſpirit, but alſo a good quantity of flores, according to the nature of the mineral, which are of no ſmall vertue: for the minerals and metals are by this quick fire deſtroyed and reduced to a better condition, whereof many things could be written: but it is not good to reveal all things. Conſider this ſentence of the Philoſophers. *It is impoſſible to deſtroy without a flame. The combuſtible Sulphur of the Calx, which the digged Mine doth doe.*

Alſo fuſible minerals and metals may not only be melted, therewith, but alſo cupellated in a moment upon a Table in the hand or in a nut ſhel; whereby ſingular proofs of oares and metals may be made and much better, then upon a Cupel, whereof further in the fourth part of this book. Here is opened unto us a gate to high things; if entrance be granted unto us, we ſhall need no more books to look for the Art in them.

To make metallical ſpirits and flores by the help of ſalt-nitre and linnen cloth.

IF metals be diſſolved in their appropriated Menſtruums, and in the ſolution (wherein a due proportion of ſalt nitre muſt be diſſolved) fine linnen rags be dipt and dryed, you have a prepared metal, which may be kindled, and (as it was mentioned above concerning the ſaw duſt) through the burning away and conſuming of their ſuperfluous ſulphur, the mercurial ſubſtance of the metal is manifeſted. And after the diſtillation is ended, you will finde a ſingular purified calx, which by rubbing coloureth other metals, as that of gold doth guild ſilver, that of ſilver over-ſilvereth copper, and copper calx maketh iron look like copper, *&c.* which colouring though it cannot bring any great profit, yet at leaſt for to ſhew the poſſibility, I thought it not amiſs to deſcribe it: and perchance ſomething more may be hid in it, which is not given to every one to know.

Of Gun-powder.

OF this miſchievous compoſition and diabolical abuſe of Gunpowder much could be written: but becauſe this preſent world taketh onely delight in ſhedding innocent blood, and cannot endure that unrighteous things ſhould be reproved, and good things praiſed, therefore it is beſt to be ſilent, and to let every one anſwer for himſelf, when the time cometh that we ſhall give an account of our ſtewardſhip, which perhaps is not far off; & then there will be made a ſeparation of good and bad, by him that tryeth the heart, even as gold is refined in the fire from its droſs. And then it will be ſeen what Chriſtians we have been. We do all bear the name, but do not approve our ſelves to be ſuch by our works: every one thinketh himſelf better then others, and for a words ſake which one underſtandeth otherwiſe, or takes in another ſenſe then the other (and though it be no point, wherein ſalvation doth depend) one curſeth and condemneth another and perſecuteth one another unto death which Chriſt never taught us to do, but rather did earneſtly command us that we ſhould love one another, reward evil with good, and not good with evil, as now a dayes every where they uſe to do, every one ſtandeth upon his reputation, but the honor of God and his command are in no repute, but are trampled under foot, and Lucifers pride, vaine ambition, and Phariſaicall hypocriſie or ſhew of holineſs, hath ſo far got the upper-hand with the learned, that none will leave his contumacy or ſtubbornneſs, or recede a little from his opinion although the whole world ſhould be turned upſide down thereby. Are not theſe fine Chriſtians? By their fruit you ſhall know them, and not by their words. Woolves are now clothed with ſheeps skins, ſo that none of them almoſt are to be found, and yet the deeds and works of Woolves are every where extant.

All good manners are turned into bad, women turn men, and men women in their faſhion and behaviour, contrary to the inſtitution and ordinance of God and Nature. In brief, tke world goeth on crutches. If *Heraclitus* and *Democritus* ſhould now behold this preſent world, they would finde exceeding great cauſe for their lamenting and laughing at it. And therefore it is no marvel, that God ſent ſuch a terrible ſcourge as the gun-powder is upon us; and it is credible, that if this do not cauſe our amendment, that a worſe will follow, *viz.* thunder, and lightning falling down from heaven, whereby the world ſhalbe turned upſide down for to make an end of all pride, ſelf-love, ambition, deceit and vanity. For which the whole creature doth waite, fervently deſiring to be delivered from the bondage thereof.

Now this preparation, which is the moſt hurtfull poyſon, a terror unto all the living, is nothing elſe but a *fulmen terreſtre* denouncing unto us the wrath and coming of the Lord. For Chriſt for to judge the world is to come with thundering and lightning: and this earthly thunder perchance is given us for to put us in minde and fear of that which is to come; but this is not ſo much as thought on by men, who prepare it only for to plague and deſtroy mankinde therewith in a moſt cruel and abominable manner, as every one knoweth.

For none can deny but that there is no nimbler poyſon, then this gunpowder. It is written of the Baſiliske, that he killeth man only by his look, which a man may avoyd, and there are but few (if any at all) of them found: but this poyſon is now prepared and found every where.

How often doth it fall out, that a place wherein this powder is kept is ſtricken with thunder as with its like, in ſo much that all things above it are in a moment deſtroyed, and carryed up into the aire? Alſo in ſieges, when an Ordnance is diſcharged, or mines blown up, all whom it lays hold on, are ſuddenly killed, and moſt miſerably deſtroyed. What nimbler poyſon then could there be invented? I beleeve there is none, who will not acknowledge it to be ſuch.

And ſeeing that the ancient Philoſophers and Chymiſts were alwayes of opinion, that the greater the poyſon is, the better medicine may be made of it, after it is freed from the poyſon, which with us their poſterity proved true by many experiences; as we ſee by Antimony, Arſenick, Mercury, and the like minerals, which without preparation are meer poyſon, but by due prepartion may be turned into the beſt and moſt effectual medicaments, which though not every one can comprehend or believe, yet your Chymiſts know it to be true, and the doing of it is no new thing to them. And becauſe I treat in this ſecond part of medicinal ſpirits, and other good medicaments, and finding that this which can be made out of the gunpowder, is none of the leaſt, I would not omit in ſome meaſure, and as far as lawfully may be done, to ſet down its preparation: which is thus performed.

How to make a ſpirit of Gunpowder.

YOur diſtilling veſſel being made warm, and a great receiver with ſweet water in it, being applyed to it without luting, put a diſh with gunpowder, containing about 12. or 15. grains a peece, one after another into it ; in the ſame manner as above was taught to do with gold. For if you ſhould put in too much of it at once, it would cauſe too much winde and break the receiver.

As ſoon as you have conveighed it into the veſſel, ſhut the doore, and the gunpowder will kindle, and give a blaſt that it maketh the receiver ſtir,and a white miſt or ſteam will come over into the receiver. As ſoon as the powder is burnt, you may caſt in more before the miſt is ſettled, becauſe elſe the diſtilling of it would coſt too much time, and ſo you may continue to do untill you have ſpirit enough. Then let the fire go out, and the furnace grow coole, and then take off the receiver, poure the ſpirit with the water that was poured in before (the flores being firſt every where waſhed off with it) out of the receiver into a glaſs body, and rectifie it in a B. through a limbeck, and there will come over a muddy water, taſting and ſmelling of ſulphur : which you muſt keep. In the glaſs body you will finde a white ſalt, which you are to keep likewiſe in the glaſs-body. Take out the *Caput Mortuum*, which remained in the diſtilling veſſel, and looks like gray ſalt, calcine it in a covered crucible, that it turn white, but not that it melt ; and upon this burnt or calcined ſalt, pour your ſtinking water, which came over through the limbeck, and diſſolve the calcined white ſalt with it, and the feces which will not diſſolve caſt away. Filtre the ſolution, and poure it upon the white ſalt, which remained in the glaſs body,from which the ſulphureous ſpirit was abſtracted before, and put the glaſs body (with a limbeck luted upon it) into ſand, and abſtract the ſulphureous water from it, which will be yellowiſh, and ſmell more of ſulphur then it did before.

This water if it be abſtracted from the ſalt ſeveral times, will turn white, almoſt like unto milk, and taſt no more of ſulphur, but be pleaſant and ſweet. It is is very good for the diſeaſes of the lungs. Alſo it doth guild ſilver, being anoynted therewith, although not firmely, and by digeſtion it may be ripened and reduced into a better medicine.

The ſalt which remained in the glaſs body, urge with a ſtrong fire, ſuch as will make the ſand, wherein the glaſs ſtandeth red hot, and there will ſublime a white ſalt into the limbeck, in taſte almoſt like unto ſalt Armoniack, but in the the midſt of the glaſs body, you will finde another, which is yellowiſh, of a mineral taſte and very hot upon the tongue.

Theſe ſublimed ſalts, as well the white which did aſcend into the limbeck, as the yellow, which remained in the glaſs body are good to be uſed in the plague, malignant feavers and other diſeaſes, where ſweating is required; for they doe mightily provoke ſweating, they comfort and do cleanſe the ſtomach, and cauſe ſometimes gentle ſtools.

But what further may be done in Phyſick with it, I do not know yet.

In Alchymie it is alſo of uſe, which doth not belong to this place upon the remaining ſalt which did not ſublime you may pour rain water, and diſſolve it there in the glaſs body, (if it be whole ſtill) elſe if it be broken, you may take out the ſalt dry, and diſſolve and filtre and coagulate it againe, and there will be ſeparated a great deal of fæces. This purified ſalt, which will look yellowiſh, melt in a covered crucible, and it will turn quite blood red, and as hot as fire upon the tongue, which with freſh water you muſt diſſolve again, and then filtre and coagulate; by which operation it will be made pure and clear, and the ſolution is quite green before it be coagulated, and as fiery as the red ſalt was before its diſſolution.

This graſs green ſolution being coagulated again into a red fiery ſalt, it may be melted again in a clean and ſtrong crucible, and it will be much more red and fiery.

N. B. And it is to be admired, that in the melting of it many fiery ſparks do flye from it, which do not kindle or take fire, as other ſparks of coales or wood uſe to do. This well purified red ſalt being laid in a cold and moiſt place, will diſſolve into a blood red oyle, which in digeſtion diſſolveth gold and leaveth the ſilver: this ſolution may be coagulated, and kept for uſe in Alchymie.

There may alſo a pretious Tincture be extracted out of it with alcolized ſpirit of wine, which Tincture guildeth ſilver, but not firmely.

And as for uſe in Phyſick, it ought to be kept as a great Treaſure. But if the red fiery ſalt be extracted with ſpirit of wine before gold be diſſolved therewith, it will yeild likewiſe a faire red Tincture, but not ſo effectual in Phyſick as that unto which gold is joyned. And this Tincture can alſo further be uſed in Alchymie, which belongeth not hither, becauſe we onely ſpeak of medicaments.

Of the uſe of the medicine or Tincture made of the Gunpowder.

THis Tincture whether with or without gold, made out of the red ſalt, is one of the chiefeſt that I know to make, if you go but rightly to work, and prepare it well: for it purifieth and cleanſeth the blood mightily, and provoketh alſo powerfully ſweat and urine; ſo that it may ſafely and with great benefit be uſed in the plague, feavers, epilepſie, ſcurvy, in *Melancholia Hypochondriaca*, in the gout, ſtone, and the ſeveral kinds of them; as alſo in all obſtructions of the ſpleen and liver: and in all diſeaſes of the lungs, and it is to be admired that of ſuch a hurtful thing ſuch a good medicine can be prepared. Therefore it would be much better to prepare good medicaments of it, to reſtore the poor diſeaſed to health therewith, then to deſtroy with it thoſe that are whole and ſound.

I know a Chymiſt, that ſpent much time and coſt to ſearch this poyſonous dragon, thinking to make the univerſal medicine or ſtone of the ancient Philoſophers out of it. Eſpecially becauſe he ſaw, that ſo many ſtrange changes of colours appeared, whereof mention is made by the Philoſophers when they deſcribe their medicine and the preparation thereof.

The dragons blood, Virgins milke, green and red lion, black blacker then black, white whiter then white, and the like more needleſs here to relate, which eaſily may perſwade a credulous man as it hapned alſo unto him. But afterward he found, that this ſubject in which he put ſo much confidence, was leprous and not pure enough, and that it be impoſſible to to make that tingent ſtone of it, for to exalt men and metals, and ſo was glad to be contented with a good particular medicine and to commit the reſt unto God.

And ſo much of that poyſonous dragon the gunpowder: but that there is another and more purer dragon, whereof the Philoſophers ſo often made mention, I do not deny: for nature is mighty rich, & could reveal us many Arcana by Gods permiſſion: But becauſe we look only for great honor and riches, and neglect the poor, there is good reaſon why ſuch things remaine hidden from the wicked and ungodly men.

To make ſpirits and fiores of Nitre and Coales.

IF you diſtill Nitre (well purified from its ſuperfluous ſalt) mixed with good coals, the Egyptian Sun bird doth burn away, and out of it doth ſweat a ſingular water, uſeful for men and metals. Its burnt aſhes are like unto calcined Tartar, and for the purging of metals not to be deſpiſed.

To make flores and ſpirits of flints, cryſtals or ſand, by adding of coales and ſalt nitre to them.

TAke one part of flints or ſand, and three parts of Linden coales, with ſix parts of good ſalt nitre mixed well together, and caſt of it in, and the combuſtible ſulphur of the flints will be kindled by the piercing and vehement fire of the ſalt nitre, and maketh a ſeparation, carrying over with it part thereof, which it turneth into ſpirits and flores, which muſt be ſeparated by filtring, The ſpirit taſteth as if it had been made of ſalt Tartar and flints, and is of the ſame nature and condition; and the remaining *Caput Mortuum* alſo yeildeth ſuch an oyle or liquor in all like unto that, and therefore its condition is not deſcribed here, but you may finde it where I ſhall treat of the ſpirit made of ſalt tartar by adding of flints.

To make a ſpirit and oyle out of Talck with ſalt nitre.

TAke one part of Talck made into fine powder, and three parts of Linden-coales, mixe them with five or ſix parts of good ſalt nitre, caſt in of that mixture one ſpoonful after another, and there will come over a ſpirit and a few flores, which muſt be ſeparated as hath been taught above concerning flints.

The ſpirit is not unlike unto the ſpirit of ſand: the *Caput Mortuum*, which looks grayiſh, muſt be made red hot or burnt well in a crucible, ſo that it melt, and then powre it out, and it will yeild a white tranſparent Maſſa, like as the flints and cryſtals do, which in a cold moiſt cellar will turn to thick liquor, fatter in the handling then the oyle of ſand. It is ſomething ſharpe like unto oyle of Tartar; it cleanſeth the skin, haire and nailes, and makes them white; the ſpirit may be uſed inwardly for to provoke ſweat and urine: externally uſed it cleanſeth wounds, and healeth all manner of ſcabs in the body out of hand. What further may be done with it, I do not know yet: But how to bring Talck, pebles and the like ſtony things to that paſs, that they may be diſſolved with ſpirit of wine and reduced into good medicaments ſhall be taught in the fourth part.

To make a ſpirit, flores, and an oyle out of Tin.

IF you mixe two parts of the filings of Tin, with one part of good ſalt nitre, and caſt it in, as you were taught to do with other things, then the ſulphur of Tin will kindle the ſalt nitre, and make a flame, as if it were done with common ſulphur, whereby a ſeparation is made, ſo that one part of the Tin cometh over in flores and ſpirit, and the reſt ſtayeth behinde, which if it be taken out, ſome of it in a moyſt place will turn into a liquor or oyle, which externally may be uſed with good ſucceſs in all ulcers for to cleanſe them. It hath alſo the vertue, if it be pertinently applyed to graduate and exalt wonderfully all the colours of vegetables and animals, which would be uſeful for dyers. The ſpirit of it mightily provoketh ſweating: the flores being edulcorated and uſed in plaſters, do dry and heal very ſpeedily.

To make a ſpirit, flores and a liquor out of Zinck or ſpeauter.

IN like manner as hath been taught with the Tin, you may alſo proceed with the Zinck, and it will yeild a good deal of flores, and alſo a ſpirit and oyle, almoſt of the ſame vertues with thoſe made of Tin: and theſe flores corrected with ſale nitre, are better then thoſe which were taught to be made by themſelves in the firſt part of the book.

To make a ſpirit, flores and oyle of Lapis Calaminaris.

Mixe two parts of ſalt nitre with one part of *lapis calaminaris* and caſt it in, and it will yield a ſharp ſpirit very uſeful for ſeparating of metals, and there will come over alſo a few yellow flores. The reſt remaining behinde is a dark green Maſs very fiery upon the tongue, like ſalt of Tartar, and if it be diſſolved with raine water, yeildeth a graſs green ſolution, which being not preſently coagulated into ſalt, the green ſeparateth it ſelf from the fixed ſalt nitre, and there falleth to the bottom a fine red powder, and if it be edulcorated and dryed, and given in from one grain to ten or twelve it cauſeth gentle ſtools and vomits, better then prepared Antimony; for *lapis calaminaris* and Zinck are of the nature of gold, as in the fourth part ſhall be proved : the white *lixivium* or lye, from which the green is precipitated, may be coagulated into white ſalt, like unto ſalt of Tartar; but if you coagulate the green ſolution, before the green be ſeparated from the ſalt nitre, then you will get a very faire green ſalt, high in colour and much more fiery then ſalt of Tartar, whereby ſpecial things can be done in Alchymy, which doth not belong hither. And if you deſire to make ſuch a green ſalt for to uſe it in Alchymie, you need not to take ſo much pains, as firſt to diſtil a ſpirit out of the mixture, but take three or four parts of good ſalt nitre, and mixe it with one part of *lapis calaminaris*, and let this mixture boyle together in a winde furnace, till the ſalt nitre be coloured green by the *lapis calaminaris*, then powre it out and ſeparate the green goldiſh ſalt from it, and make ſuch good uſe of it as you thinke fit.

But if you will extract a good Tincture and Medicine, make it into powder, and extract it with ſpirit of wine, and it will yeild a blood red Tincture, both in Phyſick und Alchymie of good uſe.

Further you are to take notice, that among all metals and minerals, which I know (except gold and ſilver) there is n one found, out of which can be extracted a greenneſs which is of fire-proofe, but only out of *lapis calaminaris*, which deſerveth to be well conſidered and further thought upon.

To make a ſpirit of ſalt-nitre, ſulphur and common ſalt.

TAke one part of ſalt, two parts of ſulphur, and four parts of ſalt nitre, grinde all together, and caſt in one ſpooneful after another to diſtill, and it will yeild a ſharp yellow ſpirit, which if it be put among common water, ſo that the water be not made too ſharp of it, it is a good bath, good for many diſeaſes; eſpecially it healeth all ſcabs very ſuddenly. The *Caput Mortuum* may alſo be diſſolved in water and uſed among bathes, and it is good likewiſe, but the ſpirit is penetrating, and doth operate ſuddenly in ſhrinkings and other defects of the nerves, of ſuch kinde of bathes there ſhall be ſpoken more in the third part. Alſo the remaining fixed yellow ſalt is good to be uſed in Alchymie: for it graduateth ſomewhat the ſilver by cementing.

To make a ſpirit, flores and oyle out of ſalt nitre and Regulus Martis.

TAke one part of *Regulus Martis ſtellatus* (made of one part of Iron or ſteele, and three parts of Antimony, whoſe preparation is deſcribed in the fourth part) and three parts of pure ſalt nitre, mix and grinde all together, and caſt it in by little and little to diſtill, and there will come over a ſpirit together with a white ſublimate, which muſt be ſeparated with water, as hath been taught above with other flores and both the ſpirit and and the flores are good to provoke ſweat. The remaining *Caput Mortuum* (as they uſually call it) is not dead, but full of life and vertue, whereby much good may be done both in Phyſick and Alchymie, as followeth. The remaining Maſs, which looks white, and is very ſharpe and fiery (if the *Regulus* have been pure, if not, then it will look yellowiſh) may be edulcorated with freſh water, and it will yeild a *lixivium* or lye in all like unto calcined Tartar,but ſharper and purer, and may be uſed almoſt in all operations in-ſtead of ſalt of Tartar (but firſt the *Regulus Antimonii* muſt be precipitated from it by the help of water) and afterward it may be coagulated into ſalt and kept for its uſe; the edulcorated, as alſo that which was precipitated with water is a white and fine powder, uſeful in the plague, feavers, and other diſeaſes to provoke ſweating thereby, and may very ſafely be uſed, and although if it be given in a greater quantity then uſual, it do cauſe ſome vomits alſo, yet for all that it doth no hurt. It is eaſily taken becauſe it hath no taſte. It is given to children from 3.4. to 12. grains: to elder folkes from ℈ ß. to ʒ ß. they worke ſucceſſefully in all diſeaſes, where ſweating is needfull. This *Antimonium diaphoreticum*, may alſo be melted into glaſs, and ſo extracted and diſſolved with ſpirit of ſalt, and it may be prepared into ſeveral good medicaments: and if all that which may be done with it, ſhould be deſcribed at large, it would require too much time. The *lixivium*, if it be coagulated, hath wonderfull vertues, ſo that if one ſhould deſcribe them, he would hardly be credited by any body, becauſe it is not made of coſtly things; and truly the life of man is too ſhort to finde out by experience all that lyes hid in it: and it would be but a laughing matter to a proud fool,if one ſhould reveale it: therefore it is better to keep counſel, then to ſow ſtrife. *Baſilius Valentinus* in his Triumph of Antimony, where he writeth of the ſigned ſtar, hinted it ſufficiently, but very few take notice of it. *Paracelſus* alſo, here and there in his books under an unknown name,makes frequent mention of it; but its true preparation and uſe, by reaſon of the unthankeful was never deſcribed by the Philoſophers, which for inſtruction of good honeſt men we do here mention.

Before you edulcorate the *Regulus* (made by fulmination) you may extract of it a good medicinal Tincture with ſpirit of wine, and if you diſſolve it with ſpirit of ſalt, there will ſhoote a white foliated Talck in all like unto the Mineral Talck: whereof a liquor may be made, which coloureth the skin very white, but if this calx of Antimony, before it be extracted with ſpirit of wine or diſſolved with ſpirit of ſalt be made into fine powder, and expoſed to the moiſt aire, it will diſſolve into a fat liquor, which though it be ſomething ſharpe, yet doth no hurt to the skin, if it be uſed with diſcretion, but rather cleanſeth it more then any other thing, and ſo it doth likewiſe to the haire and nailes; but as ſoone as the liquor hath been applyed for that purpoſe, it muſt be waſhed off again with water, leſt it do not onely take away the groſs and unclean skin, but alſo work upon the tender white skin and do hurt, and therefore I give warning, that you uſe it diſcreetly: for according to the old proverbe, you may miſuſe even that which elſe is good in it ſelf. If you put ſome of it into warm water and bath your ſelf in it, the groſs skin will peele off all the body, ſo that you will almoſt ſeem to be another body. And this bath alſo is good for many diſeaſes: for it openeth the pores mightily, and cleanſeth all the blood in the body, by drawing many ill humors out of it, which maketh a man light and ſtrong, eſpecially if he be purged firſt, before he uſeth the bath. It is alſo good for Melancholy, ſcurvy and leproſie, eſpecially when the red Tincture drawn out of it with ſpirit of wine, be uſed beſides. It is alſo good to be uſed in a foot bath for thoſe that are troubled with corns and other excreſcencies upon their feet, or with nailes that cut the fleſh; for it ſofteneth them and makes them fit for cutting, and as tractable as wax. For there is nothing known under the Sun, which ſoftneth more a hard skin, haire, nailes and other excreſcencies, then this oyle. And this I did ſet down therefore, becauſe I know, that many are ſo tormented therewith, that they cannot well endure their ſhoes upon their feet. But if you coagulate this oyle into ſalt, and melt it in a crucible, and powre it out into a flat braſs baſon, that it flow at large and may be broken, then you have the beſt Cauſticum, to open the skin withal where is need. If you diſſolve crude Tartar with it and coagulate it again, you will get a ſalt which is uſeful in many Chymical operations; and there may be extracted out of it a blood red Tincture with ſpirit of wine, which proveth very effectual againſt all obſtructions.

Alſo every combuſtible ſulphur can be eaſily diſſolved with it, and uſed among bathes, it acteth his part admirably. If any oyle of ſpices be boyled therewith, then the oyle will diſſolve in it, and they turn together to a balſome, which doth mingle it ſelf with water, and is good to be taken inwardly for ſome infirmities : but women with childe muſt not meddle with it, becauſe it makes them miſcarry. But after their delivery, it is good to expel after burthen and other reliques. But if you boyle *Oleum ligni Rhodii* with this liquor and roſe water ſo long till the oyle do incorporate with the liquor and waters and then ſeparate the watery ſubſtance from it, you will get a ſope as white as ſnow, which may be uſed for to waſh the hands with it, and it doth ſmel very wel. You may alſo waſh the head with it ; for it ſtrengthneth the braine and cleanſeth the head and haire. This ſope may be diſtilled, and it will yeild a penetrating oyle, very good for the ſinews and nerves.

Now as this liquor of *Regulus Antimonii* ſoftneth the skin, nailes, haire, feathers, horns, and the like, and diſſolveth them more then any thing in the world : In the like manner alſo it hath power to diſſolve not only metals, but alſo the hardeſt ſtones, but not in that manner which is done by boyling, and was mentioned by the ſulphur, but after another way, which is not proper for this place. It ſufficeth that I hinted it. The fiery fixed ſalt nitre can be diſſolved with ſpirit of ſalt or vinegar, and ſublimed into a *Terra foliata.* What further can be effected with it, doth not belong to this place, and perchance ſome where elſe more ſhall be ſpoken of it.

To diſtil Butyrum out of Antimony, Salt and vitriol, like unto that, which is made out of Antimony and Mercury ſublimate.

TAke one part of crude Antimony, two parts of common ſalt, and four parts of vitriol calcined white, beat all to powder and mix them wel,and ſo caſt it in as you were taught to do with other materials, and there will come over a thick oyle of Antimony like butter, which may be rectified like any other oyle, that is made after the common way with Mercury ſublimate, and is alſo the ſame with it in uſe, which uſe you may ſee in the firſt part: the ſame alſo can be made better and in a greater quantity in the furnace deſcribed in the firſt part, and alſo with leſs coals and time by the help of the open fire, becauſe it endureth greater heat then in the ſecond furnace.

To diſtil Butyrum of Arſenick and Orpiment.

AFter the ſame manner as was taught with Antimony, there may alſo out of Arſenick and Auripigment together with ſalt and vitriol a thick oyle be diſtilled, which not only outwardly but alſo inwardly is ſafe to be uſed, and may be ſo corrected, that it ſhall be nothing at all inferior in vertue unto the *butyrum Antimonii*,but rather go beyond it: which perchance will ſeem impoſſible to many. But he that knows the nature and condition of minerals, will not be aſtoniſhed at my words, but they will be to him as a light in a darke place.

To make a rare ſpirit of vitriol.

IF common vitriol be diſſolved in water, and you boyle granulated Zinck in it, all the metal and ſulphur contained in the vitriol will precipitate on the Zinck, and the ſolution will turn white, the precipitated matter is nothing elſe, but iron, copper, & ſulphur, which the ſalt of vitriol did containe, and now is drawn from it by the Zinck. The reaſon why the metal precipitateth out of the ſalt upon the Zinck, belongeth to the fourth part, where you will finde it ſufficiently explained; The white ſolution, from which the metallical matter is ſeparated, muſt be coagulated to the dryneſs of ſalt, and ſo by it ſelf a ſpirit diſtilled of it, which riſeth eaſily, and is in taſte and vertue not unlike unto common oyle of vitriol, but only that this is a little purer then the common.

Here perchance many may object: you take the green from the vitriol, which *Paracelſus* doth not teach, but bids us to keep it. To which I anſwer, that I do not teach here to make the ſweet red oyle of vitriol, whereof *Paracelſus* hath written, but the white acid oyle; which is as good, or rather much better then the common, which is made of the common impure vitriol. To what purpoſe is it that you take green vitriol to diſtil, whereas the green doth not come over, and although that green ſhould come over, why ſhould that oyle be better then the white? for the green in the common vitriol is nothing elſe but copper and iron, which the ſalt water running through the paſſages of Metals did diſſolve and take into it ſelf, and as ſoon as ſuch a green vitriol feeleth the fire, the green turneth into red, which is nothing elſe but a calcined iron or copper, which in the reducing by a ſtrong fire and by melting is made manifeſt.

Paracelſus hath not taught us, that we ſhould drive over the green by the force of the fire into a red and ſweet oyle, but he hath ſhewed us an other way, which is found out by few men, whereof in the beginning of the ſecond part already hath been made mention.

This ſpirit or acid oyle diſtilled out of the purified vitriol is of a pleaſant ſowreneſs, and ſerveth for all thoſe uſes, which above by the vitriol were deſcribed. And this proceſs is ſet down onely for that end, that we may ſee, that when the vitriol is purified, that then it is eaſier diſtilled, and yeildeth a more pleaſant ſpirit, then if it be yet crude and impure.

And that ſuch a purifying of the vitriol is nothing elſe but a precipitating of the metal, which the water (as before ſaid) running through the veines thereof hath aſſumed, is thus to be proved; diſſolve any metal in its appropriate Menſtruum, whether it be done with diſtilled acid ſpirits or ſharpe ſalts, adding common water to them, or elſe dry by the fire in a crucible, according as you pleaſe, and then put into that ſolution another metal, ſuch as the diſſolvent doth ſooner ſeize on, then upon that which it hath aſſumed and then you will finde, that the diſſolvent doth let fall the aſſumed metal or mineral, and fals upon the other, which it doth ſooner ſeiſe on, and diſſolveth it as being more friendly to it; Of which precipitation in the fourth part ſhall be ſpoken more at large.

This one thing more is worthy your obſervation, that among all metals there is none more ſoluble then Zinck, and therefore that all the other (as well in the dry as in the wet way) may be precipitated thereby and reduced into light calxes, in ſo much that the calx of gold or ſilver precipitated in this manner (if ſo be you proceed well) retaineth its ſplendor or gloſs, and is like a fine powder wherewith you can write out of a pen.

To make a ſubtle ſpirit and pleaſant oyle of Zinck.

BEcauſe I made mention here of Zinck, I thought good not to omit, that there may be made a penetrating ſpirit and wholeſome oyle out of it by the help of vinegar, which is thus to be done. Take of the flores (which were taught to be made in the firſt part) one part, put them into a glaſs (fit for digeſtion) and poure upon them 8. or 10. parts of good ſharp vinegar made of honey; or in want thereof take wine vinegar, and ſet the glaſs with the flores and vinegar in a warm place to diſſolve, and the ſolution being performed, powre off the cleer, which will look yellow, and after you have filtred it abſtract the phlegme, and there will remaine a red liquor or balſome, to which you muſt add pure ſand, ſuch as is well burnt, and diſtill it, and firſt there will come over an unſavory phlegme, afterward a ſubtle ſpirit, and at laſt a yellow and red oyl which are to be kept by themſelves ſeparated from the ſpirit as a treaſure for to heale all wounds very ſpeedily. The ſpirit is not inferior unto the oyle, not onely for inward uſe to provoke ſweat thereby, but alſo externally for the quenching of all inflammations, and doubtleſs this ſpirit and oyle is good for more diſeaſes, but becauſe its further uſe is not known to me yet, I will not write of it, but leave the further triall to others.

To diſtil a ſpirit and oyle out of lead.

IN the ſame manner as was taught of the Zinck, there may be out of lead alſo diſtilled a ſubtle ſpirit and a ſweet oyle, and it is done thus: Poure ſtrong vinegar upon *Minium*. or any other calx of lead, which is made *per ſe*, and not with ſulphur, let it digeſt and diſſolve in ſand or warm aſhes, ſo long till the vinegar be coloured yellow by lead, and turned quite ſweet. Then poure off the clear ſolution, and poure on other vinegar, and let this like wiſe diſſolve, and this repeat ſo often, till the vinegar will diſſolve no more, nor grow ſweet, then take all theſe ſolutions, and evaporate all the moyſture, and there will remaine a thick ſweet yellow liquor, like unto honey, if the vinegar was not diſtilled, but if it was diſtilled and made clear, then no liquor remaineth, but onely a white ſweet ſalt. This liquor or ſalt may be diſtilled after the ſame manner as was taught with the Zinck, and there will come over not only a penetrating ſubtle ſpirit, but alſo a yellow oyle, which will not be much, but very effectual, in all the the ſame uſes, as of the ſpirit and oyle of the Zinck was taught.

N. B. This is to be obſerved, that for to make this ſpirit and oyle, you need no diſtilled ſpirit, but that it may be done as well with undiſtilled vinegar, and the undiſtilled yeilds more ſpirit then the diſtilled. But if you look for a white and cleer ſalt, then the vinegar muſt be diſtilled, elſe it doth not ſhoote into cryſtals, but remaineth a yellow liquor like unto honey, and it is alſo needleſs to make the ſolution in glaſſes, and by digeſtion continued for a long time, but it may as well be done in a glaſed pot, *viz.* powring the vinegar upon the Minium in the pot, and boyling it on a coale fire; for you need not fear that any thing of the vinegar will evaporate, in regard that the lead keeps all the ſpirits, and lets onely go an unſavory phlegme. You muſt alſo continually ſtir the lead about with a wooden ſpatula, elſe it would turn to a hard ſtone, and would not diſſolve: the ſame muſt be done alſo when the ſolution is done in glaſſes; and the ſolution after this way may be done in three or four houres: and when both kinde of ſolutions are done, there will be no difference betwixt them, and I think it providently done not to ſpend a whole day about that which may be done in an houre.

And if you will have this ſpirit and oyle better and more effectual, you may mix ℥ i. of crude Tartar made into powder with ℔ j. of diſſolved and purified lead, and ſo diſtill it after the ſame manner as you do diſtill it by it ſelf, and you will get a much ſubtler ſpirit aud a better oyle then if it were made alone by it ſelf.

To diſtill a ſubtile ſpirit and oyle out of crude Tartar.

MAny think it to be but a ſmal matter to make the ſpirit of Tartar, for they ſuppoſe, that if they do but onely put Tartar into a retort, and apply a receiver, and by a ſtrong fire force over a water, they have obtained their deſire: and they do not obſerve, that in ſteed of a pleaſant ſubtle ſpirit, they get but a ſtinking vinegar or phlegme; the pleaſant ſpirit being gone. Which ſome careful operators perceiving, they cauſed great receivers to be made, ſuppoſing by that means to get the ſpirit. Now when they after the diſtillation was done, weighed their ſpirits together with the remainder, they found, that they had ſuffered great loſs, wherefore they ſuppoſed it to be an impoſſible thing, to get all the ſpirits, and to loſe none, and indeed it is hardly poſſible to be done otherwiſe by a retort: for although you apply a great receiver to a ſmal retort, and that there be alſo but a little Tartar in it, and the joynts being wel luted, ſo that nothing can paſs through, and though you make alſo the fire never ſo gentle, hoping to get the ſpirit by that way, yet for all that you cannot avoyd danger and loſs. For at laſt the retort beginning to be red hot, and the black oyle going, then and but then the ſubtleſt ſpirits will come forth, which either ſteale through the joynts, or elſe do break the retort or receiver, becauſe they come in abundance and with great force, and do not ſettle eaſily: wherefore I will ſet down my way of making this moſt profitable, and excellent ſpirit.

The preparation and the uſe of the ſpirit of Tartar.

TAke good and pure crude Tartar, whether it be red or white, it matters not, make it into fine powder, and when the diſtilling veſſel is red hot, then caſt in with a ladle half an ounce and no more at once, and ſo ſoon as the ſpirits are gone forth and ſetlted, caſt in another ℥ ß. and this continue, till you have ſpirit enough, then take out the remainder, which will look black, and calcine it wel in a crucible, and put it in a glaſs retort, and poure the ſpirit that came over together with the black oyle upon it, drive it in ſand at firſt gently, and the ſubtleſt ſpirits will come over, and after them the phlegme, at laſt a ſowre vinegar together with the oyle, whereof you muſt get each by it ſelf. But if you deſire to have the ſubtle ſpirit which came over firſt, more penetrating yet, then you muſt take the *Caput Mortuum* that ſtayed in the retort, and make it red hot in a crucible, and abſtract the ſpirit once more from it, and the calcined Tartar will keep the remaining moyſtneſs or phlegme, and onely the ſubtleſt ſpirit will come over, which is of a moſt penetrating quality, whereof from half a dram to an ounce taken in wine or any other liquor provoketh a quick and ſtrong ſweat, and it is a powerful medicine in all obſtructions, and moſt approved and often tryed in the plague, malignant feavers, ſcurvy, *Melanchclia Hypochondriaca*, colick, contracture, epilepſie and the like diſeaſes. And not onely theſe mentioned diſeaſes, but alſo many others more, which proceed from corrupt blood under God may ſucceſſefully be cured with it.

The phlegme is to be caſt away, as unprofitable: the vinegar cleanſeth wounds: the oyle allayeth ſwelling and pains, and doth cure ſcabs, and diſperſeth knobs that are riſen upon the skin, as alſo other excreſcencies of the ſame, if it be uſed timely, and the uſe thereof be continued.

N. B. If the black ſtinking oyle be rectified from the calcined *Caput Mortuum*, it will be clear and ſubtle, and it will not only aſſwage very ſpeedily all pains of the goute, but alſo diſſolve and expel the conglobated gravel in the reines, applyed as a plaſter or unguent. In like manner it will diſſolve and extract the coagulated Tartar in the hands, knees and feet, ſo that the place affected will be freed and made whole thereby: becauſe in ſuch a deſpicable oyle there lyes hid a volatile ſalt which is of great vertue. But if you deſire experimentally to know whether it be ſo, then poure upon this black ſtincking oyle an acid ſpirit, as the ſpirit of common ſalt, or of vitriol or ſalt-nitre, or only diſtilled vinegar, and the oyle will grow warm and make a noyſe and riſe, as if *Aqua fortis* had been powred upon ſalt of Tartar, and the acid ſpirit will be mortified thereby, and turne to ſalt. And this well purified oyle doth diſſolve and extract the Tartar out of the joynts (unleſs it be grown to a hard ſtony ſubſtance) even as ſope ſcowres the uncleanneſs out of cloths, or to compare it better, even as like receiveth its like, and is eaſily mixed with it, and doth love it; but on the contrary, nothing will mixe it ſelf with that wherewith it hath no affinity at all. As if you would take pitch out of cloth by waſhing it with water, which never will be done by reaſon of the contrary nature; for common water hath no affinity with pitch or other fat things, nor will it ever be taken out therewith without a mediator, partaking of both natures, *viz.* of the nature of pitch and that of the water, and ſuch are ſulphureous ſalts, and nitrous ſalts, whether they be fixed or volatile. As you may ſee at the ſoape-boylers, who incorporate common water by the help of ſulphureous ſalts with fat things, as tallow and oyle. But if you take warm oyle or any thin fat ſubſtance, and put it upon the pitch or rozin, then the oyle eaſily accepteth of and layes hold on its like, and ſo the pitch is diſſolved and got out of the cloth, and the remaining fatneſs of the oyle may be fetcht out of the cloth with lye or ſope and common water, and ſo the cloth recovereth its former beauty and pureneſs. And as it falleth out with the ſulphureous things, ſo it doth likewiſe with the Mercurial. For example, if you would take the ſalt out of powdred fleſh or pickled fiſh with lixivium it would not ſucceed, becauſe that the nitrous and acid ſalts are of contrary natures.

But if upon the powdred fleſh or pickled fiſh you poure on water wherein ſome of the ſame ſalt (wherewithall the fleſh was powdered) is diſſolved, that ſalt water will extract the ſalt out of the fleſh, as being its like, much more then common ſweet water, wherein there is no ſalt.

In this manner the hardeſt things alſo, as ſtones and metals, may be joyned or united with water, whereof more in my other books are extant; it is needleſs here therefore to relate. I gave a hint of it, onely for to ſhew, that alwayes like with like muſt be extracted. True it is that one Contrarium can mortifie another, and take the corroſiveneſs from it, whereby the paynes for a time are aſſwaged, but whether the cauſe of the diſeaſe it ſelf be eradicated thereby is a queſtion.

Here may be objected, that I made a difference between the ſulphureous and Mercurial ſalts, whereas neither Mercury nor ſulphur apparently is to be ſeen in either. It is true, he that doth not underſtand nor know the nature of ſalts, is not able to apprehend it. And I have not time now to demonſtrate it, but the ſame is ſhewed at large in my book *de Natura ſalium*, that ſome of them are ſulphureous, and ſome Mercurial: but he that looks for a further direction yet, let him read my book *de Sympathia & Antipathia rerum*, wherein he ſhall finde it demonſtrated that from the Creation of the World to the time preſent, there were alwayes two contrary natures fighting one againſt the other, which fight will continue ſo long till the Mediator betwixt God and Man, the Lord Jeſus Chriſt ſhall put an end unto this ſtrife, when he ſhall come to ſeparate the good from the bad, by whoſe lightning and fire flame the proud and hurtful ſuperfluous ſulphur ſhall be kindled and conſumed; the pure Mercurial being left in the center.

How to make pretious ſpirits and oyles out of Tartar joyned with ſome minerals and metals.

TAke any metal or mineral, diſſolve it in a fit menſtruum, mix with it a due proportion of crude Tartar, ſo that the crude Tartar being made into powder together with the ſolution make up a pap as it were; then at once caſt in one ſpoonful of it, and diſtil it into a ſpirit and oyle, which after the diſtillation muſt be ſeparated by rectification, for to keep each by it ſelf for its proper uſe.

The uſe of the metallized ſpirit and oyle of Tartar.

THis ſpirit of a Tartarized metal is of ſuch a condition, that it readily performeth its operation according to the ſtrength of the ſpirit, and the nature of the metal or mineral, whereof it is made. For the ſpirit and oyle of gold and Tartar is good for to corroborate the heart, and to keep out its enemies: the ſpirit of ſilver and Tartar doth ſerve for the braine; that of Mercury and Tartar, for the liver: of lead and tin for the ſpleen and lungs: of iron and copper for the reins and ſeminary veſſels: that of Antimony and Tartar for all accidents and infirmities of the whole body; and theſe metallical ſpirits made with Tartar, provoke ſweat exceedingly whereby many malignities are expelled out of the body. Likewiſe alſo the oyle hath its operation, though this of ſeveral metals, as of Mercury and copper, is not well to be uſed inwardly, becauſe it cauſeth ſalivations and ſtrong vomits. But externally they are very good for to cleanſe all putride ulcers, and to lay a good and firme ground for healing them.

The remainder, whereof the ſpirit and oyle is diſtilled, you may take out, and reduce it in a crucible into a metal, ſo that what is not come over, may not be loſt, but made to ſerve againe.

And as you were taught to diſtill ſpirits and oyles out of diſſolved metals and crude Tartar, ſo you may get them likewiſe out of common vitriol and Tartar, *viz.* thus, take one part of Tartar made into powder, two parts of good pure vitriol, mixe them well together, and diſtill a ſpirit of them, which though it be unpleaſant to take, for all that in all whatſoever obſtructions and corruption of blood it is not to be deſpiſed, but very ſucceſſefully performeth its operation; eſpecially when it is rectified from its *Caput Mortuum*, and ſo freed from its phlegme; and its beſt vertue, which conſiſteth in the volatility, be not loſt in the diſtilling.

N.B. But if you will have this ſpirit more effectual, then you may joyn Tartar and vitriol by boyling them together in common water, and cryſtallizing; and then caſt it in, and diſtill it, and there will come over a much purer and more penetrating ſpirit; becauſe that in the ſolution and coagulation of both many fæces were ſeparated: but if to one part of vitriol you take two parts of Tartar, and diſſolve it together and ſo filtre and coagulate it, then the Tartar with the vitriol will ſhoote no more, but there remaineth a thick liquor like unto honey, out of which with ſpirit of wine there may be extracted a good tincture againſt obſtructions. This liquor taken from ℈ i. to ʒi. doth purge very gently, and ſometimes it cauſeth a vomit, eſpecially if the vitriol was not pure and good: and it may alſo be diſtilled into a ſpirit not inferior unto the former in vertue. Beſides the way above taught, there is yet (for to diſtill a metallized ſpirit of Tartar) another way, whereby ſeveral metals and minerals may be reduced into much pleaſant ſpirits and oyles, and of more vertue, and it is done in this manner.

Take of the Tartar of white Rheniſh wine made into powder, powre upon it ſweet raine or rnnning water, ſo that to ℔ j. of Tartar there come ℔ x. or ℔ xij. of water, or ſo much that the Tartar may be diſſolved by it in the boyling, and then boyle the mixture with the water in a tinned kettle, or which is better, in a glaſed pot, until it be quite diſſolved, and in the mean while take off the skum (with a woodden skimmer) ſtill as it riſeth in the boyling: and when no more skum riſeth, and all the Tartar is diſſolved, then powre the ſolution thus hot through a linen cloth, tyed ſtraight on an earth glaſed veſſel, that the remaining ſlymigneſs may be ſeparated. The Tartar water being ſtrained, let it ſtand for 24. or 30. houres without ſtirring, and there will ſtick a cryſtalliſed Tartar to the ſides of the veſſel, which after the water is powred off may be taken out, and waſhed with cold water, and then dryed. This purified Tartar keep, untill I ſhall teach you, what further is to be done with it; and this Tartar is pure enough for the above ſaid purpoſe, *viz.* to reduce metals into oyle with it, as ſhall follow anone. It is alſo good taken of it ſelf for an abſterſive to make the body ſoluble. But if you deſire to have it yet whiter and fairer and in great cryſtals, you muſt proceed thus.

You muſt know this that all ſalts, if they ſhall ſhoote into great cryſtals, there muſt be a great quantity of them, for of little there comes but little. And if you will make great and faire white cryſtals of Tartar, which will be not better then the former, but only pleaſant to the eye, then you muſt proceed in this manner.

Take of white Tartar made into powder about ten or thirty ℔. powre ſo much water upon it, as is needful for to diſſolve it, and boyle it by a ſtrong fire in a tinned kettle untill all the Tartar be diſſolved, which you may know by ſtirring in it with a woodden ladle, and skim off diligently all the filth riſing on the water; and you muſt take heed, that you take neither too much nor too little water to it; for if you take too little, part of the Tartar will remaine undiſſolved, and ſo will be caſt away and loſt among the ſlime: but if you take too much of it, then the Tartar is too much diſperſed in the water, and cannot ſhoote well, and ſo will likewiſe be loſt, being caſt away afterwards with the water. For I heard many a one complain, that they could get but little of a pound, and therefore ſuppoſed the Tartar to have been nought, whereas the fault was not in the Tartar but in the workman, that managed not wel his work, powring away one half which did not ſhoote with the water: but if you proceed well, then four pound of common Tartar will yeild ℔ iij. of pure white Cryſtals. The ſolution being well made, and one, and no skim more riſing at the top, cover the kettle, and let it coole without removing from the warme place it ſtands in, which will be done within three or four dayes, if the kettle be bigg. But the fire muſt be taken away from under the kettle, and ſo let it ſtand for the time mentioned. In the mean while the Tartar will cryſtalliſe to the ſides of the kettle, which cryſtals after the time is expired and the water powred off, are to be taken out and waſhed and boyled again with freſh water, and ſo skimmed and cryſtalliſed; and this proceeding muſt be ſtill reiterated, untill (which is done the third or fourth time) the cryſtals are white enough: then take them out, dry and keep them for uſe; whereof from ʒ j. to ℥ j. made into powder, and taken in wine, beer, warme broth or other liquor, will give ſome gentle ſtooles, and ſerveth for thoſe, which cannot endure ſtrong phyſick. This Tartar may be ſharpened with Diagridium or any other purging drug, that ſo you need not take it in ſo great a quantity at once, but a leſſer doſe may ſerve turn. But if you do not look for great cryſtals, but only for Tartar well purified, then you may uſe this following manual, and you will get exceeding faire and gliſtering little cryſtals, which need no beating into powder, but by the working come to be ſo pure and fine, as if they had been ground upon a ſtone, and looking not like a dead powder, but having a gloſs, like unto ſmall gliſtering ſnow that fell in very cold weather, and it is done thus: when the cryſtals are come to be pure enough by often diſſolving and coagulating, then diſſolve them once again in pure water, and pour the ſolution into a clean veſſel of wood, copper or earth being glaſed; and let it not ſtand ſtill (as above taught with the cryſtals) but as ſoon as it is powred in, with a clean wooden ſtick ſtirr about continually without ceaſing, till all be cold, which will be done in half an houre. In this ſtirring the Tartar hath no time to ſhoote into cryſtals, but doth coagulate into the ſmalleſt gliſtering powder, pleaſant to behold, and like unto frozen ſnow ſettleth to the bottom of the veſſel; then poure off the water, and dry the powder, and keep it for uſe. The waters which you powred off, in regard that they containe yet ſome Tartar, ought not to be caſt away (as others do) but evaporated, and the Tartar contained in them will be ſaved, and ſo nothing will be loſt, and in this manner not onely white Tartar may be reduced into clear cryſtals, but alſo the red being ſeveral times diſſolved and cryſtalliſed, loſeth its redneſs, and turneth white and cleer. Beſides the above ſaid there is another way to reduce the Tartar into great white cryſtals at once by precipitation: but theſe being good enough for our purpoſe, *viz.* to make good medicines out of metals, I hold it needleſſe to loſe more time by the relation of it, and ſo I will acquieſce.

The other way to make a metalliſed ſpirit of Tartar.

TAke of purified Tartar diſſolved and coagulated but once as much as you pleaſe, poure ſo much raine or other ſweet water to it as will ſerve to diſſolve it; in which ſolution you muſt boyle the plate of metals, until the Tartar have diſſolved enough of it, ſo that it will diſſolve no more; the ſigne whereof is, when the ſolution is deep coloured of the metal, and during your boyling you muſt often ſupply the evaporated water with pouring on of other, leſt the Tartar come to be too dry and burn; and this ſolution may be done beſt of all in a metallical veſſel; as when you will make the ſolution of iron, you may do it in an iron pot; and for copper you may take a copper kettle, and ſo forth for other metals, a veſſel made of the ſame is to be taken. But you muſt know that gold, ſilver and crude Mercury, unleſs they be firſt prepared cannot be diſſolved like iron and copper, but when they are prepared firſt for the purpoſe, then they will alſo be diſſolved. In like manner ſome minerals alſo muſt be firſt prepared, before they can be diſſolved with Tartar and water. But if you can have good glaſſes or glaſed veſſels of earth, you may uſe them for all metals and minerals for to diſſolve them therein, and the ſolution you may not onely uſe of it ſelf for a medicine, but alſo diſtill it, and make a very effectual ſpirit and oyle of it as followeth.

To diſtil the ſpirit and oyle of Lead and Tin.

TAke the filings of Lead and Tin, and boyle them with the water or ſolution of Tartar in a leaden or tin-veſſel, untill the Tartar be ſweetned by the water, ſo that it will diſſolve no more, to which paſs it will be brought within twenty four hours, for both theſe metals will be diſſolved but ſlowly, but if you would perform this ſolution ſooner, then you muſt reduce the metals firſt into a ſoluble calx, and then they may be diſſolved in leſs time then an houre. The ſolution being done, you muſt filtre it, and in B. abſtract all the moyſture to the thickneſs or conſiſtency of honey, and there will remaine a pleaſant ſweet liquor, which of it ſelf without any further preparation may ſafely be uſed inwardly for all ſuch diſeaſes, for which other medicaments, made of theſe metals are uſeful. Eſpecially the ſweet liquor of lead and tin doeth much good in the plague, not only by driving the poyſon from the heart by ſweating, but alſo by breaking or allaying the intolerable heat, ſo that a happy cure doth follow upon it: but externally the liquor of lead may be uſed ſucceſfully in all inflammations, and it healeth very ſuddenly, not only freſh wounds, but alſo old ulcers turned to fiſtulaes; for the Tartar cleanſeth and lead conſolidates.

The liquor of tin is better for inward uſe then for outward whoſe operation is not ſo fully known yet, as that of lead. But if you will diſtill a ſpirit thereof, then caſt it in with a ladle by little and little, as above in other diſtillations oftentimes was mentioned, and there will come over a ſubtle ſpirit of Tartar, carrying along the vertue and beſt eſſence of the metals and therefore doth alſo prove much more effectual, then the common ſpirit of Tartar, which is made alone by it ſelfe, and this ſpirit as well that which is made of tin, as that of lead, if it be well dephlegmed firſt, may be uſed and held for a great treaſure in all obſtructions, eſpecially of the ſpleen; and few other medicins will go beyond them; but beſides there muſt not be neglected the uſe of good purging medicines, if need require them. With the ſpirit there cometh over alſo an oyle, which is of a quick operation, eſpecially in wounds and ſores of the eye, where other oyntments and plaſters may not ſo fitly be uſed; for it doth not only allay the heat and inflammation, a common ſymptome of the eye wounds, but alſo doth hinder and keep back all other ſymptomes, which few other medicaments are able to do; and for the reſidue, if it be driven further by the ſtrongeſt fire, then there will come over a ſublimate, which in the aire diſſolveth into oyle, which is alſo of a powerful operation, not only in phyſick, but alſo in Alchymie.

And the Lead runeth together in a fair white *Regulus*, which is much whiter, purer and fairer then other common lead: but the Tartar retaines the blackneſs, and raiſeth it ſelf to the top as a fuſible droſs, which is impregnated with the ſulphur of lead, wherewith you may colour haire, bones, feathers and the like, and make them to be and remaine brown and black.

I made tryal once of ſuch a diſtillation in an iron veſſel, whereby the ſame in the inſide was ſo whitened by the purified lead, that it was like unto fine ſilver in brightneſs: which afterwards trying againe, it would not fall ſo faire as at firſt; whereat none ought to wonder, for I could write ſomething more (if it were fit) of Tartar, knowing well what may be effected with it, if I did not ſtand in fear of ſcoffers, which do vilifie ~~all~~ what they do not underſtand. I durſt preſume to call Tartar the ſope of the Philoſophers; for in the cleanſing of ſome metals by long experience I found it of admirable vertue; though I would not be underſtood thus, as if I did count it to be the true *Azoth univerſalis Philoſophorum*, ~~whereby they~~ waſh their Laton: but I cannot deny, but that it is of particular uſe for the waſhing and cleanſing of ſeveral metals: for it is endued with admirable vertues for the uſe of metals, whereof in other places more ſhall be ſaid hereafter.

How to make a Tartariſed ſpirit and oyle out of Iron or Steel and Copper.

IF you intend to make a good medicine out of iron or ſteel or copper joyned with Tartar, then for the iron or ſteel take an iron pot, and for copper a kettle of copper, make them very clean and put in it the filings of iron or ſteel or copper, which you pleaſe, and twice as much of pure Tartar made into powder, and ſo much water, that the Tartar may be diſſolved well by it in the boyling, and ſo boyle the metal with the Tartar-water ſo long, till it be deeply coloured by the metal, as red by the iron, and deep green by the copper; and when the water in the boyling doth waſte, you muſt ſtill ſupply it with other, that the Tartar may not burn; for there muſt be alwayes ſo much water, that no skin of the Tartar may riſe at the top, but that it remaine alwayes open, and there muſt not be too much water neither, leſt it be too ſweet, and not able to diſſolve the metal. The ſolution of iron or ſteel being come to be red and ſweet, and in taſte like unto vitriol, but green and bitter of copper, powre it off warm by inclination into an other clean veſſel, and let it ſtand ſo long againe in a very gentle heap of coals, till almoſt all the water be evaporated, and the diſſolved metal with the Tartar remaine in the conſiſtency of honey.

Which metallical liquor may be uſed inwardly and outwardly (eſpecially that of iron) which doth purge gently, and openeth the obſtructions of the liver and ſpleen; cleanſeth the ſtomach and killeth the wormes: externally uſed it is a good wound balſame, and goes far beyond all ſuch as are made of vegetables. It is a ſingular treaſure, not onely for to cure new wounds; but alſo for to cleanſe and heal old corrupt exulcerated ſores, turned to fiſtulaes: but the liquor of copper is not ſo ſafe for to be uſed inwardly, for it is not only very unpleaſant in taſte, but alſo cauſeth vehement vomits: and therefore I would not adviſe any one to be forward to uſe it, unleſs it be for ſtrong folkes and for to kill wormes in them, for which purpoſe it is excellent good and ſurpaſſeth all other medicines whatſoever; but to little children it ought not to be given at all, in regard that it is of farre too ſtrong an operation for them.

N. B. And if you will uſe it to ſtrong bodies againſt the wormes or ſtomach-agues you muſt obſerve that the patient (in caſe he cannot get it up) thruſt his finger into the throat to further the vomiting, that it may not ſtay behinde, but come forth againe out of the body, which done health followeth upon it; but if it remaine in the body, it cauſeth a loathſomneſs to uſe it any more. And therefore you muſt take heed to uſe it warily: and in regard that this liquor is very bitter, you may mixe it with ſome ſugar, to facilitate the taking thereof: but that of iron needeth no ſuch correction, it being ſweet enough of it ſelf, and therefore I commend and prefer it before the other. But if you will needs that of copper (becauſeth it worketh ſo ſtrongly) then the patient muſt keep in from the cold aire, and not preſently after the operation load the ſtomach with ſtrong drink and ſuperfluity of meat, contenting himſelf with ſome warm broth and a little cup of wine or beer, and the next day his meat and drink will taſte the better with him, and do him ſo much the more good.

But externally this liquor is of the ſame uſe with that of iron or ſteel, yea proveth more effectual and ſpeedier in healing. It would be good that Surgeons knew how to prepare it, and would uſe it inſtead of their ſalves, wherewith many freſh wounds are ſpoyled and turned into horrid ulcers, eſpecially it requiring ſo little coſt and paines to make it. And if you would have theſe liquors purer yet, you muſt poure on ſpirit of wine, and extract them, and they will eaſily yeild their Tincture, and leave many fæces behinde which are good for nothing: but the Tincture will be ſo much the better, purer and more effectual, ſo that you need but one to four or five drops for purging, whereas of the groſs liquor you muſt have from 4. 6. 8. to 12. or 16. drops: and this extracted Tincture worketh alſo much better externally and keepeth longer then the balſame or liquor, which in time is corrupted, but the extraction is never ſpoyled. But if you will diſtil the liquor or balſame, it is needleſs that it be extracted firſt, but may be diſtilled ſo as the boyling made it, after the ſame manner, as above was taught for Lead, and there will come over a yellow ſpirit and oyle from iron or ſteel, and from copper a greeniſh ſpirit and oyle.

The ſpirit and oyle of iron may ſafely be uſed in the plague, feavers, obſtructions, and corruption of blood, from ʒ i. to ℥i. It is much better to provoke ſweat, then that which is made of crude Tartar, without addition of a metal: the like doth that alſo which is made of copper and more effectually yet and ſometimes cauſeth a vomit, if it be uſed in a greater quantity, then is fitting.

N. B. Although the Chymiſts do perfer copper before iron as a more firme and ripe metal, nevertheleſs it is found by experience, that iron or ſteel by reaſon of its ſweetneſs is better to be uſed for an inward medicine then copper. But for external uſe copper (if it be well prepared) hath the preheminence, being an appropriate medicine for all ulcers and open ſores, in all the parts of the body, if the ſame inwardly be kept clean beſides by fitting purges. For not only the now deſcribed medicine, but alſo many more beſides, are taught to be made out of copper in other places of my books.

A Country-phyſick and purge I will teach for thoſe, which either live far from Apothecary-ſhops, or have no money to ſpare for phyſick, and it is to be made out of iron and copper, whereby they may cleanſe their ſlymie ſtomachs, ſpoyled by a diſorderly dyet, whence headaches, wormes, agues and other diſeaſes are occaſioned, warning withal thoſe that are either too old or too young, or elſe decayed and weak, and ſo not ſtrong enough for ſuch powerful phyſick, that they will forbear to uſe it, leſt beſides the wormes they kill and expel life it ſelf alſo; but thoſe that are of a ſtrong conſtitution, and a midle age, and of a ſound heart, may ſafely uſe this purge, whereby ſtomach-agues, belly-worms, and many other occult diſeaſes may be cured with good ſucceſs. The preparation is done thus: Take ℥ ß. of pure Tartar made into powder, and ℥ß. or ℥j. of ſugar or honey, and ℥v. or ℥vj. of ſpring or raine water, put all into a clean copper veſſel which is not greaſie and boyle it upon a coal fire as long or ſomewhat longer then you uſe to boyle an egg, or at the furtheſt half a quarter of an hour; take off the skum in boyling, let it ſtand till it be milk warm, ſo that it may be drunke. This potion taſting almoſt like warme wine ſweetned with ſugar, give unto the patient to drink, and let him faſt upon it, and within half an hour it will begin to work upwards and downwards: whereat you need not to be amazed, but only keep the body warm, and within an houre it will have done working. But if you will drive out wormes from little children by purging, then in ſtead of the copper-veſſel, take a clean iron-veſſel, and put in a leſs quantity of Tartar, ſugar and water, and boyle it as aboveſaid, and give it to them, and it will purge onely downward, but ſometimes it will alſo give a gentle vomit, which will do them no hurt, but rather will cleanſe the ſtomach the better. But if the drink be too weak, ſo that it doth not work, it may be uſed againe the next day (but you muſt take more of the ingredients, or elſe let them boyle longer) there is no danger in it at all, if you proceed aright and it is much pleaſanter to take, then the bitter wormſeed, wherewith they uſually torment children.

The reaſon why this decoction works in this manner is that the Tartar and ſugar being boyled in metallical veſſels with water worke upon the metal, and extract vertue out of it, which cauſeth vomiting and purging (the Tartar alſo being helpful to it.)

How to make a Tartariſed ſpirit of Mercury.

VUlgar Mercury cannot be diſſolved like the former metals with Tartar and water, without any foregoing preparation; but muſt be ſublimed firſt with ſalt and vitriol, or cryſtalliſed with *Aqua fortis*, and then it may be diſſolved by boyling with Tartar and water, and reduced into a balſame, like other metals, but it is not to be uſed inwardly, unleſs it be digeſted a ſufficient time, ſo that its fierceneſſe be allayed: Externally it may ſafely be uſed in all deſperate, eſpecially venereal ſores, and it is a very effectual and profitable medicine for them. But moſt of all it doth ſerve for Alchymie, although few do know this gueſt, becauſe he will not be ſeen by every one. The ſpirit which comes over from it by diſtillation, is an admirable thing not only in phyſick, but alſo in Alchymie: yet you muſt take heed, that in ſtead of a friend, you do not harbor a great enemy: for its force and vertue is very great and powerful.

How to make a Tartariſed ſpirit of Gold and Silver.

GOld and ſilver alſo can by no means be diſſolved with Tartar in a wet way: but in a dry way adding its helper to it, it will eaſily diſſolve, which doth not belong hither; but if you will draw a ſpirit of it, then the gold and ſilver muſt firſt by diſſolving and coagulating be reduced to cryſtals, and then diſſolved with purified Tartar and water,) and of Gold you will get a yellow ſolution, and of ſilver a white inclining unto green, which being reduced to the conſiſtency of honey, may be uſed ſafely and without fear. The ſolution of Gold doth looſen and keep the body open, it effectually ſtrengtheneth the ſtomach, heart, lungs, and liver, and other principal members; and that of ſilver purgeth very forcibly, according to the quantity given, like another purge, but without harme or danger, ſo that in all diſeaſes where purging is neceſſary, it may be uſed ſafely from ℈i. to ʒß. but that of gold is uſed in a ſmaller quantity: and both the liquor of gold and of ſilver may very ſuceeſsfully be uſed externally: but becauſe for external uſes inferior metals will ſerve the turn, it is needleſs to uſe coſtly things thereto.

The ſpirit which is forced from it by diſtillation, is endued with great vertue: for the volatile part of the metal cometh over joyned with the ſpirit of Tartar, the remainder may be reduced, ſo as it was taught of other metals. This ſpirit eſpecially that of Gold is exceeding good in the plague and other diſeaſes, where ſweating is neceſſary: for it driveth not onely by ſweating all malignities from the heart, but alſo doth ſtrengthen the ſame and preſerveth it from all hurtful ſymptomes. Likewiſe alſo that of ſilver is very commendable, eſpecially if it be firſt dephlegmed from its *Caput Mortuum*, as above was taught in the preparation of the common ſpirit of Tartar. For any Phyſitian expert in Chymiſtry may eaſily gueſs what the ſpirit of Tartar well rectified and impregnated with the vertues of gold may effect, and therefore it is needleſs to make any further mention of it, but it ſhall be left to the tryal thereof.

To make a Tartarized ſpirit of Antimony.

CRude Antimony cannot be diſſolved in ſuch a manner as above hath been taught: but if it be firſt prepared into flores, or a *vitrum*, it yeildeth eaſily its vertue in boyling, and it is done thus: Take to one part of the flores or of ſmal ground *vitrum Antimonii* made *per ſe*, three parts of pure Tartar, and 12. or 15 parts of clean water, boyle the Antimony with the Tartar and water in a glaſed pot for three or four hours, and the evaporated water muſt be ſtill ſupplyed with other that the Tartar may not burn for want of water, and the *vitrum* muſt be ſometimes ſtirred about with a wooden ſpatula (which the flores being light do not need) This done, the Tartar water will be deep red coloured by the Antimony, and leave the remaining Antimony ſettled in the bottom, from which powre off the ſolution, and after having filtred it, evaporate the water from it, and then extract it once more with ſpirit of wine, and you will get a blood red *Extractum*, whereof 1. 2. 3. to 10. or 12. drops given at once, cauſeth gentle vomits and ſtooles, which may be ſafely uſed by old and young people in all diſeaſes that have need of purging, and you need not fear any danger at all: For I know no vomit, which purgeth more gently then this, and if you pleaſe you may make it work only (*per inferiora*) downward, ſo that it ſhall cauſe no vomits at all: and you need do nothing elſe but make a toſte of brown bread, and hold it hot to your noſe and mouth, and when this is almoſt cold, have another hot in readineſs, and ſo uſe one after another by turns, till you feel no more loathing, and that the vertue of Antimony hath begun to work downward: This is a good ſecret for thoſe that would uſe Antimonial phyſick, but that they are afraid of vomiting, which they are not able to endure. But if you will not ſpend ſo much paines, as to make ſuch an Extract, then do as you was taught above to do with the copper, and take ten or twelve grains of prepared Antimony for an old body, but for a young one 5. 6. grains or more or leſs according to the condition of the perſon, and ℥ß. or ʒvj. of pure Tartar, and together with ℥iiij. or ℥v. of water put it in a little pipkin, and boyle it a quarter of an houre, then poure the ſolution onely into a cup, and diſſolve a little ſugar in it, whereby the acidity of the Tartar will be ſomewhat qualified. This *decoctum* drink warm, and keep your ſelf as it is fit, and it will work much better, then it had been ſteeped over night in wine, which not every one can abide to take faſting: but this *decoctum*, becauſe it taſteth like warm and ſweet wine, is much pleaſanter for to take.

N.B. It is to be admired, that well prepared Antimony is never taken in vaine: for although it be given in a very ſmall quantity, ſo that it cannot cauſe either ſtooles or vomits, yet it worketh inſenſibly, *viz.* it cleanſeth the blood, and expelleth many malignities by ſweat, ſo that mighty diſeaſes may be rooted out thereby without any great ſenſible operation. Which many times hapned unto me, and gave me occaſion to think further of it: and therefore I ſought how to prepare Antimony ſo, that it might be uſed daily without cauſing of vomits or ſtooles, which I put in execution accordingly, and found it good, as afterward ſhall follow.

Of the ſolution above deſcribed, *viz.* of the flores of Antimony with Tartar make a good quantity, and after the evaporation of the water diſtill a ſpirit of it, and there will alſo come over a black oyle, which muſt be ſeparated from the ſpirit, and rectified *per ſe*; and externally applyed it will not onely do the ſame wonderful operations, which above have been aſcribed to the ſimple oyle of Tartar, but it goeth alſo far beyond it, for the beſt eſſence of Antimony hath joyned it ſelf thereunto in the diſtilling, and ſo doubled the vertue of the oyle of Tartar; and this oyle may with credit be uſed not onely for all podagrical tumors to allay them very readily, but alſo by reaſon of its dryneſs it doth conſume all other tumors in the whole body, whether they be cauſed by winde or water: for the volatile ſalt by reaſon of its ſubtlety conveigheth the vertue of Antimony into the innermoſt parts of the body in a marvellous and incredible way, whereby much good can be performed in Chyrurgerie.

As for the ſpirit, you may not onely uſe it very ſuccesfully, in the plague, pox, ſcurvy, *Melancholia Hypochondriaca*, feavers and other obſtructions and corruptions of blood; but alſo if you put ſome of it into new wine or beer, and let it work with it, the wine or beer comes to be ſo vertuous thereby, that if it be daily uſed, it doth ſtay and keep off all diſeaſes proceeding from ſuperfluous humors and corrupted blood, ſo that neither plague, ſcurvy, *Melancholia hypochondriaca*, or any other diſeaſe of that kinde can take roote in thoſe that daily uſe it, wherein no metal or mineral (except gold) can be paralleld with it: but in caſe you have no conveniency for to make that ſpirit, and yet you would willingly have ſuch a medicinal drink made of Antimony, then take but of the ſolution made with Tartar, before it be diſtilled, and put ℔ i. or ℔iß. of it into 18. or 20. gallons of new wine or beer, and let it work together, and the vertue of the Antimony by the fermentation of the wine will grow the more volatile and efficacious to work. And if you cannot have new wine (in regard that it doth not grow every where) you may make an artificial wine of honey, ſugar, peares, figs, cherries or the like fruit, as in the following third part ſhall be taught, which may ſtand in ſtead of natural wine.

Theſe medicinal wines ſerve for a ſure and ſafe preſervative, not only to prevent many diſeaſes, but alſo if they have poſſeſſed the body already, effectually to oppoſe and expel them. Alſo all externall open ſores (which by daubing and plaſtering could not be remedied) by daily drinking thereof may be perfectly cured. For not only *Baſilius Valentinus* and *Theophraſtus* Paracelſus, but many more before and after them knew it very well, and have written many good things of it, which few did entertain, and (becauſe their deſcription was ſomewhat dark) moſt deſpiſed and diffamed them for untruths.

In like manner and much more may this my writing be lightly eſteemed of, becauſe I do not ſet down long and coſtly proceſſes, but only according to truth and in ſimplicity do labour to ſerve my neighbour, which doth not ſound well in the ears of the proud world, which rather do tickle and load themſelves with vaine and unprofitable proceſſes, then hearken unto the truth; and it is no wonder, that God ſuffereth ſuch men, which only look after high things, and deſpiſe ſmall things to be held in error.

Why do we look to get our Medicines by troubling our braines, and by ſubtle and tedious works, whereas God through the ſimple nature doth teach us otherwiſe. Were it not better to let ſimple nature inſtruct us? ſurely if we would be in love with ſmall things, we ſhould finde great ones. But becauſe all men do ſtrive only for great and high things, therefore the ſmall alſo are kept from them; and therefore it would be well, that we could fancy this maxime, that alſo things of ſmall account can do ſomething, as we may ſee by the Tartar and the deſpicable Antimony, and not only ſo many coles, glaſſes, materials, and the like, but alſo the pretious time would not be waſted ſo much in preparing of medicaments: for all is not gold that gliſtereth, but oftentimes under a homely coate ſome glorious thing is hid; which muſt be taken notice of.

Some may object why I do teach to joyn the Antimony firſt with the Tartar by the help of common water before its fermentation with the wine: whether it would not be as good to put it in of it ſelf in powder, or to diſſolve it with ſpirit of ſalt (which would be eaſier to do then with Tartar) and ſo let it work? To which I anſwer, that the working wine or drinke, receiveth no metallical calx or ſolution, unleſs it be firſt ptepared with Tartar or ſpirit of wine. For although you diſſolve Antimony, or any other metal or mineral in ſpirit of ſalt, or of vitriol, or of ſalt nitre, or any other acid ſpirit, and then think to let it work with wine or any other drink you will finde that it doth not ſucceed; for the acide ſpirit will hinder the fermentation, and let fall the diſſolved metals, and ſo ſpoyle the work; and beſides, Tartar may be uſed among all drinks, and doth more agree with ones taſte and ſtomach, then any corroſive ſpirit.

In the ſame manner as was taught of Antimony, other minerals and metals alſo may be fitly joyned with wine or other drink, & the uſe of ſuch Antimonized wine is this, *viz.* that it be drunk at meals & betwixt meals like other ordinary drink to quench thirſt, but for all that it muſt not be drunk in a greater quantity, then that Nature be able to bear it. For if you would drink of it immoderately, it would ſtir vomits, which ought not to be, for it is but only to work in an inſenſible way, which if it be done, it preſerveth not only the body from all diſeaſes proceeding from corrupted impure blood, as the plague, leproſie, pox, ſcurvy, and the like, but by reaſon of its hidden heat, whereby it doth conſume and expel all evil and ſalt humors (as the Sun dryeth up a poole) by ſweat and urine, & ſo doth unburthen the blood from all ſuch ſharpe and hurtful humors, it doth not only cure the above ſaid diſeaſes but alſo all open ſores, ulcers, fiſtulaes, which by reaſon of the ſuperfluity of ſalt humors can admit of no healing, and it doth diſpatch them in a ſhort time in a wonderful manner, and ſo firmely that there is no relapſe to be feared.

This drink is not only good for the ſick, but alſo for the whole (though in a ſmaller quantity) becauſe that it wonderfully cleanſeth the whole body, and you need not fear the leaſt hurt either in young or old, ſick or healthy. And let no man ſtumble at it, that many ignorant men do diffame Antimony and hold it to be poyſon, and forbid it to be uſed: for if they knew it well, they would not do ſo: but becauſe ſuch men know no more, then what they get by reading or by heare-ſay, they pronounce a falſe ſentence, and it might be replyed unto them, as *Apelles* did to the Shoe-maker: *Ne ſutor ultra crepidam*: but what ſhall we ſay? *Non omnis fert omnia tellus.* When an Aſs after his death doth rot, out of the carcaſs there grew beetles, which can flye higher then the Aſs from whence they came; In the like manner we wiſh it may fare with the haters of the royal Antimony, *viz.* that their poſterity may get ſeeing eyes, and what they know not, they may forbear to deſpiſe and ſcoffe at.

I muſt confeſs that if Antimony be not well prepared, and beſides be indiſcreetly uſed by the unskilful, that it may prejudice a man in his health, which even the vegetables alſo may do. But to reject it by reaſon of the abuſe, would be a very unwiſe act: If perchance a childe ſhould get into his hand a ſharpe-edged knife, and hurt himſelf or others, becauſe it doth not underſtand how to uſe a knife, ſhould therefore the uſe of a knife be rejected and forbidden to thoſe that are grown up and know how to uſe it? Good ſharpe tooles make a good workman; ſo good quick working and powerful medicines make a good phyſitian; and the ſharper the toole is, the ſooner a ſtone carver or other crafts man can ſpoyle his work by one cut which he doth amiſs: which alſo muſt be underſtood of powerful medicines, for if they be uſed pertinently in a ſhort time more good may be done with them, then with weak medicaments in a long time. Now as a ſharpe toole is not to be handled but by a good workman, ſo likewiſe a powerful medicine ought to be managed by an underſtanding and conſcientious phyſitian, who according to the condition of the perſon and the diſeaſe knows to increaſe or abate the ſtrength of the medicine, and not by ſuch an one, as doth miniſter it ignorantly without making any difference at all.

Let no man marvaile, that I aſcribe ſuch great vertues unto Antimony, it being abundantly enriched with the *primum ens* of gold. If I ſhould ſay ten times as much more of it, I ſhould not lye. Its praiſe is not to be expreſſed by any mans tongue; for purifying of the blood, there is no mineral like unto it; for it cleanſeth and purifieth the whole man in the higheſt degree, if it be well prepared firſt, and then diſcreetly uſed. It is the beſt and next friend to gold, which by the ſame alſo is freed and purified from all addition and filth, as we ſaid even now, of man. Every Antimony for the moſt part agreeth with the gold and its medicine; for out of Antimony, by the cleanſing Art may be made firme gold, as in the fourth part ſhall be taught, and which is more, by a long digeſtion a good part of the ſame is changed into gold. Whereby it is evident, that it hath the nature and property of gold and, it is better to be uſed for a medicine then the gold it ſelf, becauſe the golden vertue is as yet volatile in this, but in the other is grown fixed and compacted,and may be compared to be like an old man to a young child, which you may lead whither you pleaſe. Therefore it is my advice, that in the Antimony its medicine ſhould be ſought, it being hid therein very richly, and not to trifle away time and coſt in vaine and uſeleſs things.

Further note, That if you deſire to contract neerer together the vertue of Antimony or any other mineral or metal, as above was taught to be done with the Tartar, you muſt by exhalation of the ſuperfluous moyſtneſs in Balneo, reduce the ſolution to a honey thick liquor, and poure ſpirit of wine upon it for to extract, and within few dayes it will be very red; then powre it off and powre on other, and let this likewiſe extract: continue this proceeding with ſhifting the ſpirit of wine, till the ſpirit of wine can get no more Tincture; then put all the coloured ſpirit of wine together into a glaſs with a long neck, and digeſt it ſo long in a tepide Balneum, till the colour or beſt eſſence of Antimony be ſeparated from the ſpirit of wine and ſettled to the bottom like a blood red thick fat oyle, ſo that the ſpirit of wine is turned white againe; which is to be ſeparated from the faire and pleaſant oyle of Antimony, which is made without any corroſive,and is to be kept as a great treaſure in phyſick. The ſpirit of wine retaines ſomewhat of the vertue of Antimony, and may be uſed with ſucceſs of it ſelf both inwardly and outwardly. But the Tincture as a Panacea in all diſeaſes acteth its part with admiration and as here mentioned of Antimony, ſo in the ſame manner all metals by the help of Tartar and ſpirit of wine may without diſtilling be reduced into pleaſant and ſweet oyles, which are none of meaneſt in Phyſick : for every knowing and skilful Chymiſt will eaſily grant, that ſuch a metallical oyl,as without all corroſives out of the groſs metals is reduced into a pleaſant eſſence, cannot be without great and ſingular vertue.

How to make good ſpirits and oyles out of Pearles,*Corals,Crabs-eyes,and other light ſoluble ſtones of beaſts and fiſhes.*

TAke to one part of pearles or corals (made into fine powder) three or four parts of pure Tartar,and ſo much water as will diſſolve the Tartar by boyling; put the corals,Tartar & water together into a glaſs body,which muſt ſtand in ſand, & give it ſo ſtrong a fire,that the water boyle in the glaſs body with the Tartar, and may diſſolve the corals. (This ſolution may be done alſo in a clean earthen pot that is glaſed,and the evaporated water muſt be ſupplyed with other, as above was taught to be done with the metals.) The corals being diſſolved, let them coole, filtrate the ſolution, and abſtract all the moyſture from it in Balneo,and there will remaine a pleaſant honey-thick liquor,which may be uſed in Phyſick either of it ſelf,or elſe once more extracted with ſpirit of wine and purified, or elſe diſtilled, as you pleaſe.

The extract or Tincture is better then the liquor, and the ſpirit is better then the extract or tincture: and all three may well and ſafely be uſed; they ſtrengthen the heart and brains; eſpecially thoſe which are made of the pearles and corals,they expel the urine and keep the body ſoluble. Thoſe of crabs eyes and of pearches and other fiſhes open and cleanſe the paſſages of the urine from all ſlyme and impurity, and they powerfully expel the ſtone and gravel in the reynes and bladder.

N. B. The diſtilled ſpirit of corals being well rectified, is good for the Epilepſie, Melancholy, and Apoplexie. It expelleth and driveth out all poyſon by ſweating, becauſe it is of a golden nature and quality, whereof in another place more ſhall be ſaid.

To diſtil a ſpirit out of ſalt of Tartar and crude Tartar.

IF you take a like quantity of crude Tartar and of ſalt of Tartar, and diſſolve it with clean water, and then evaporate the water ſtill skimming it, till no skim more do riſe, and then let it coole, there will ſhoote white cryſtals, which being diſtilled as common Tartar, they will yeild a purer ſubtler and pleaſanter ſpirit, then the crude Tartar doth, in al to be uſed as above hath been taught of the ſimple ſpirit of Tartar: therefore it is needleſs here to deſcribe its uſe. Before you diſtill a ſpirit thereof, you may uſe them in ſtead of *Tartarus vitriolatus* for purging, they will cauſe gentle ſtooles, and drive alſo the urine and ſtone, and are not unpleaſant to take. The doſe is from ℈i. to ʒi. in waters fit for your purpoſe. This ſalt diſſolved with water purifieth metals (if they be boyled therein) and maketh them fairer then common Tartar doeth.

How to get a powerful ſpirit out of the ſalt of Tartar, by the help of pure ſand or peble-ſtones.

IN the firſt part of this book I taught how to make ſuch a ſpirit, but becauſe the materials, which are to be diſtilled in that furnace muſt be caſt upon quick coales, whereby the remainder is loſt, and that alſo not every one hath the conveniency to ſet up a furnace that requireth more room then this here doth: therefore I will ſet down how it may be got with eaſe in this our preſent furnace, without the loſs of the remainder, which is not inferior to the ſpirit it ſelf, and it is done thus.

Make a faire white ſalt of calcined Tartar by diſſolution, filtration and coagulation, pulveriſe that ſalt in a warmed morter, and add to it a fourth part of ſmall pulveriſed cryſtal or flints or onely of fine ſand, waſhed clean, mixe it well, and caſt one ſpoonful thereof at once into your red-hot veſſel (which muſt be made of earth) and ſo cover it, and the mixture as ſoon as it is red hot, will riſe and boyle (like common Allome doth, when it cometh to a ſudden heate) and yeild a thick white heavy ſpirit; and when it ceaſeth to come forth, and then caſt in another ſpoonful, and ſtay out the time of its ſetling, and then another part again, till all your mixture be caſt in. When no more ſpirit goeth forth, then take off the lid from the diſtilling veſſel, and with an iron ladle take out that which ſtayed behinde, whileſt it is yet red-hot and ſoft, and it will look like unto a tranſparant cleer white fuſible glaſs, which you muſt keep from the aire, for it will diſſolve in it, till I teach you what you are to do with it.

The ſpirit which came over, may either be kept as it is, or elſe rectified *per arenam* in a glaſs retort, and uſed in Phyſick; it is clean of another taſte then the ſpirit of common ſalt or vitriol, for it is not ſo ſharp; it ſmelleth of the flints after a ſulphureous manner, and taſteth urine-like, and it is very good for thoſe that are troubled with the goute, ſtone and Tiſick: for it provoketh urine and ſweat mightily, and (becauſe it cleanſeth and ſtrengthneth the ſtomach) it alſo maketh one have a good appetite to his Victuals. What it can do elſe is unknown to me as yet, but it is credible that it may act his part in many other diſeaſes, which is left free for every one to trye. In my opinion (ſince the ſpirit of the ſalt of Tartar is good to be uſed of it ſelf for the ſtone, and that here it is ſtrengthned by the ſand, which have the ſignature of the ſtone of the Microcoſme) there is hardly any particular medicine, which can go beyond it, but I leave every one to his own opinion and experience. Externally uſed it quencheth inflammations and maketh a pure skin, &c. The remainder, which I did bid you to keep, and looks like a tranſparent cleer glaſs, is nothing elſe but the moſt fixed part of the ſalt of Tartar and flints, which joyned themſelves thus in the heart, and turned to a ſoluble glaſs, wherein lyes hid a great heat and fire. As long at it is kept dry from the aire, it cannot be perceived in it: but if you powre water upon it, then its ſecret heate will diſcover it ſelf. If you make it to finde powder in

a warme

warm morter,and lay it in a moyſt aire,it will diſſolve & melt into a thick and fat oyle, and leave ſome fæces behinde. This fat liquor or oyl of flints,ſand or cryſtal may not only be uſed inwardly and outwardly of it ſelf, but alſo ſerveth to prepare minerals and metals into good medicines, or to change them into better by Chymical art. For many great ſecrets are hid in the contemptible peble or ſand; which an ignorant and unexpert man (if they were diſcloſed to him) would hardly beleeve: for this preſent world is by the divels craft ſo far poſſeſſed with curſed filthy avarice, that they ſeek for nothing but money, but honeſt and ingenious ſciences are not regarded at all; and therefore God doth cloſe our eyes that we cannot ſee what lyeth before our eyes, and we trample upon with our feet. That worthy man *Paracelſus* hath given it us ſufficiently to underſtand, when he ſaith in his book (containing the vexations of Alchymiſts)that many times a deſpicable flint caſt behind a Cow is more worth then a Cow, not only becauſe that gold may be melted out of it, but alſo that other inferior metals may be purified thereby, ſo that they are like unto the beſt gold and ſilver in all tryals; and although I never got any great profit by the doing of it, yet it doth ſuffice me that I have ſeen ſeveral times the poſſibility and truth thereof, which in its proper place likewiſe ſhall be taught.

This liquor of the flints is of that nature toward the metals, that it maketh them exceeding faire, but not ſo, like women do ſcowre their veſſels of tin, copper, iron,*&c.* with lye and ſmal ſand, till all filth be ſcoured off, and that they get a bright and faire gloſs: but the metals muſt be diſſolved therein by Chymical art, and then either after the wet or dry way digeſted in it for its due ſpace of time; which *Paracelſus* calleth to go into the mothers wombe, and be born again: if this be done rightly, then the mother will bring forth a pure child. All metals are engendred in ſand or ſtone,and therefore they may well be called the mother of metals, and the purer the mother is, the purer and ſounder child ſhe will bear, and among all ſtones there is none found purer then the peble, cryſtal or ſand, which are of one nature (if they be ſimple and not impregnated with metals:) And therefore the peble or ſand is found to be the fitteſt bath to waſh the metal withal. But he that would take this bath to be the Philoſophers ſecret Menſtruum, whereby they exalt the king unto the higheſt purity, would be miſtaken; for their Balneum is more friendly to gold by reaſon of its affinity with it then with other metals, but this doth eaſier diſſolve other metals then gold. Whereby it is evident, that it cannot be *Bernhards* his fountaine (*Bernhardi fontina*) but muſt be held only to be a particular cleanſer of metals. But omitting this and leaving it to the further practiſe and tryal of thoſe that want no time nor conveniency for to ſearch what may be done with it, let us take notice of the uſe of this liquor in phyſick, for which uſes ſake this book is written. That which hath been ſaid, was onely done to that end, that we may obſerve, that we muſt not alwayes look upon dear and coſtly things, but that many times even in mean and contemptible things (as ſand and pebles) much good is to be found.

How to extract a blood-red Tincture with ſpirit of wine out of the liquor of peble-ſtones.

IF you will extract a Tincture out of peble-ſtones, for uſe in Phyſick or in Alchymie, then in ſtead of the white take a faire yellow, green or blew peble, or flint, whether it hold fixed or volatile gold, and firſt with ſalt of Tartar diſtil the ſpirit thereof, or if you do not care for the ſpirit, then melt the mixture in a covered crucible into a tranſparent, ſoluble and fuſible glaſs, and in a warme morter make it into fine powder; put this powder in a long necked glaſs, and powre upon it rectified ſpirit of wine (it needeth not to be dephlegmed, it maters not if it be but pure) let it remaine upon it in a gentle warmth, till it be turned red (the glas with the prepared peble or flints muſt be often ſtirred about, that the peble be divided and the ſpirit of wine may be able to work upon it) then powre off the coloured ſpirit of wine, and powre on other, and let this likewiſe turn red: this powring off and on muſt be iterated ſo often, till the ſpirit of wine get no more colour out of it. All the tinctured ſpirit of wine put together, and abſtract in a Balneum through a Limbeck from the Tincture which will remaine in the bottome of the glaſs body like a red juyce; which you muſt take out and keep for its uſe.

The uſe of the Tincture of pebles or flints in Phyſick.

THis Tincture if it be made of gold pebles or ſand, is to be held for none of the leaſt medicines, for it doth powerfully reſiſt all ſoluble Tartareous coagulations, in the hands, knees, feet, reins and bladder; and although in want of thoſe that hold gold, it be extracted but only out of common white peble, it doth act its part however, though not altogether ſo well as the firſt. Let no man marvel, that ſand or pebles made potable, have ſo great vertue; for not all things are known to all; and this Tincture is more powerful yet, if firſt gold have been diſſolved with the liquor of pebles before the extraction. And let no man imagine that this tincture comes from the ſalt of Tartar (which is taken to the preparing of the oyle of ſand) becauſe that of it ſelf alſo doth colour the ſpirit of wine, for there is a great difference betwixt this Tincture and that, which is extracted out of the ſalt of Tartar: for if you diſtil that of the ſalt of Tartar in a little glaſs body or retort, there will come firſt a cleer ſpirit of wine, then an unſavory phlegme, and a ſalt will remaine behinde, in all like unto common ſalt of Tartar, wherein after its calcining not the leaſt colour appeareth, and becauſe none came over neither, it might be queſtioned where it remained then?

To which I anſwer, that it was not a true Tincture, but only that the ſulphur in the ſprit of wine was exalted or graduated by the corporeal ſalt of Tartar, and ſo got a red colour, which it loſeth as ſoone as the ſalt of Tartar is taken from it, and reaſſumeth its former white colour: even as it happeneth alſo, when the ſalt of urine, or of hartſhorn or ſoot or any other like urinous ſalt is digeſted with ſpirit of wine, that the ſpirit turneth red of it, but not laſtingly, but juſt ſo as it fals out with the ſalt of Tartar, for if by rectification it be ſeparated again from the ſpirit of wine, each (*viz.* both the ſalt and alſo the ſpirit of urine) doth recover again its former colour, whereby it appeareth, that (as above ſaid) it was not a true Tincture. He that will beleeve it, let him diſſolve but ℥i. of common white ſalt of Tartar in ℔i. of ſpirit of wine, and the ſpirit will turn as red of it, as if it had ſtood a long time upon ſeveral pounds of blew or green calcined ſalt of Tartar; and if I had not tryed it my ſelf ſeveral times, I ſhould have alſo been of that opinion: but becauſe I found it to be otherwiſe, therefore I would not omit to ſet down my opinion: though I know I ſhall deſerve ſmal thanks of ſome, eſpecially of thoſe which rather will err with the greater number, then to know and confeſs the truth with the leſs number. However I do not ſay, that the ſuppoſed tincture of the ſalt of Tartar is of no vertue or uſeleſs; for I know well enough that it was found ~~very~~ effectual in many diſeaſes: for the pureſt part of the ſalt of Tartar hath been diſſolved by the ſpirit of wine, it being thus coloured thereby, and therefore that tinctured ſpirit of wine may very fitly be uſed. But as for the Tincture, which is extracted out of the prepared pebles, it is clean of another condition: for if you abſtract the ſpirit of wine from it, though it alſo cometh over white, yet there remaineth a deep tinctured ſalt, whoſe colour is laſting in the ſtrongeſt fire, and therefore may be counted a true Tincture.

How

How by the help of this liquor out of Gold its red colour may be extracted ſo that it remains white.

THis oyle or liquor of pebles is of ſuch a condition, that it doth precipitate all metals which are diſſolved by corroſives, but not after that manner as the ſalt of Tartar doth; for the calx of metals which is precipitated by this liquor, (becauſe that the pebles do mingle themſelves therewith) is grown much heavier thereby, then if it had been only precipitated with ſalt of Tartar.

For example, diſſolve in *Aqua Regia* as much Gold as you pleaſe, and powre of this liquor upon it, till all the Gold fall to the bottome like a yellow powder, and the ſolution turn white and cleer, which you muſt powre off, and edulcorate the precipitated Gold with ſweet water, and then dry it (as you was taught to do with the *Aurum fulminans*) and you need not fear that it will kindle and fulminate in the drying, as it uſeth to do, when it is precipitated with ſalt of Tartar or ſpirit of urine, but you may boldly dry it by the fire, and it will look like yellow earth, and will weigh as heavy again as the Gold did weigh before the ſolution ; the cauſe of which weight are the peble ſtones, which did precipitate themſelves together with the Gold. For the *Aqua Regia* by its acidity hath mortified the ſalt of Tartar, and robbed it of its vertues ſo, that it could not chooſe but let fall the aſſumed pebles or ſand : on the other ſide, the ſalt of Tartar which was in the liquor of pebles, hath annihilated the ſharpeneſs of the *Aqua Regia*, ſo that it could not keep the diſſolved gold any longer whereby both the gold and the pebles are freed from their diſſolver.

This edulcorated and dryed yellow powder put into a clean crucible, and ſet it between live coals, that it begin to be red hot, but not long, and the yellow will be changed into the faireſt purple colour, which is pleaſant to behold, but if you let it ſtand longer, then the purple colour vaniſheth, and it turns to a brown and brick colour: and therefore if you deſire to have a faire purple coloured gold, you muſt take it off from the fire, as ſoon as it is come to that colour, and let it not ſtand any longer, elſe it loſeth that colour again.

This faire gold-powder may be uſed by the rich (which are able to pay for it) from ℈i. to ʒß. in convenient vehicles; and in all diſeaſes, where ſweating is needful: for beſides the provoking of ſweat, it comforteth not onely the heart, but alſo by the vertue of the peble it expelleth the ſtone in the reines and bladder (if it be not grown to the height of hardneſs) like ſand together with the urine: ſo that it may be ſafely uſed as well to prevent, as to cure the plague, gout and ſtone.

How to make further out of this purple coloured gold a ſoluble Ruby for medicinal uſe, ſhall be taught in the fourth part: for in regard that it muſt be done by a ſtrong fire in a crucible, it doth not belong hither, but to its proper place, where other like medicaments are taught to be made.

If you will extract the colour out of this precipitated gold, then powre upon it (before it be put into the fire for to calcin) of the ſtrongeſt ſpirit of ſalt, and in a gentle heat the ſpirit will diſſolve part of the gold, which will be much fairer and deeper in colour then if it had been done with *Aqua Regia*: upon this ſolution powre five or ſix times as much of dephlegmed ſpirit of wine, and digeſt both together its due time, then by the digeſtion of a long time part of the Gold will fall out of the ſolution to the bottome like a faire white powder, which may be reduced with Borax or ſalt nitre and Tartar; it is white like ſilver and as heavy as other gold, and may eaſily get its colour again by the help of Antimony. The reſidue out of which the white gold is faln, *viz.* the ſpirit of ſalt mingled with the ſpirit of wine, muſt be abſtracted from the Tincture, and there will remaine a pleaſant ſowre liquor coloured by the gold, upon the bottome of the glaſs body, which is almoſt of the ſame vertue, which above hath been aſcribed to other tinctures of the gold. Eſpecially this liquor of gold ſtrengthneth the heart, braine and ſtomach.

N.B. Sometimes there comes over with the ſpirit of wine a little red oyle, which the ſtrong ſpirit of ſalt hath ſeparated from the ſpirit of wine, and it is impregnated with the Tincture of gold. It is an excellent cordial, few are found like unto it, whereby weak people decayed by ſickneſs or age may be kept alive a long time, they taking daily ſome drops of it, who elſe for want of the *humidum radicale* would be forced to exchange their life for death.

Here ſome body may ask, whether this Tincture is to be counted or taken for a true Tincture of gold; or whether there be another better to be found?

To which I anſwer, that though many hold it to be ſuch, and I my ſelf do call it ſo here, yet that after due examination it will not prove to be ſuch: for although ſome vertue is taken from the gold by this way, yet it doth ſtil keep its life, though it be grown weak and pale, becauſe it can ſo eaſily recover its former ſound colour by a contemptible mineral: if its true Tincture or ſoul were gone from it, ſurely an inferior mineral could not reſtore it to life, but of neceſſity there would be required ſuch a thing for to do it, which hath not onely ſo much, as it hath need of for it ſelf, but hath a tranſcendent power to give life unto dead things. As we may ſee by a man or any ſenſible beaſt, that if they have loſt their vigor by adverſities, in that no life more is perceived in them, yet by medicines fit for the purpoſe, they may be refreſhed and brought to their former health, ſo that their former diſeaſe appeareth no more in them; but if their ſoul be once gone, the dead body can by no medicines be reſtored unto life again, but muſt remaine dead ſo long, till he in whoſe power it is to give and to take life, have mercy upon it. So likewiſe it is to be underſtood of the gold, when its colour is taken from it, and yet its life is left, which by the help of Antimony, being its medicine, as alſo by the help of iron or copper can be reſtored unto it ſo that it recovereth its former faire colour, ſo that you cannot ſee at all, that it ailed any thing before. But if its life be gone from the body, it is impoſſible for any ordinary metal or mineral to reſtore it to life, but it muſt be done by ſuch a thing, which is more then Gold it ſelf hath been: for even as a living man cannot give life unto a dead man, but God muſt do it, who hath created man, ſo Gold cannot reſtore to dead gold the life which hath been taken from it, and how could it then be done by an unfixt mineral? but there is required a true Philoſopher for to do it, ſuch a one as hath good knowledge of gold and its compoſition.

Now as we heard that like cannot help its like, but he that ſhall help muſt be more, then he that looks for help from him; Hence it is evident that the Tincture, whoſe remaining body (from which it is taken) is ſtill gold, can be no true Tincture; for if it ſhall be a true Tincture, it muſt conſiſt in its three principles, and how can it conſiſt therein, the body from whence it came being yet alive, and poſſeſſing indiviſibly all its three principles? How can a mans ſoul be taken from him, and yet the body live ſtill? ſome will ſay, that for all that, this may be counted a true tincture, although the body ſtill remaine gold, and have kept its life: even as man may ſpare ſome blood out of his body, which though it will make him ſomewhat pale, yet he liveth ſtill, and the loſt blood may be ſupplyed again by good meat and drinke. But what lame and ſenſeleſs objections are theſe? who would be ſo ſimple as to think, that a handful of blood may be compared to a mans life? I believe no wiſe man will do it. Although life goeth forth with the blood, yet the blood is not the life it ſelf; elſe the dead could be raiſed thereby, if a cup full of it were poured into a dead body; but where was ſuch a thing ever heard or ſeen? With ſuch groundleſs opinions ſome did preſume to cenſure the truth, ſet down in my treatiſe *de Auro Potabili vero*, ſaying, *Geber* and *Lullius* were alſo of opinion, that a true tincture can be extracted out of gold, the ſame nevertheleſs remaining good gold: but it may be asked, what it hath loſt then for to yeild a true Tincture, ſince it remained good gold? Here no body will be at home for to anſwer I doubt. What are the writings of *Geber* or *Lully* to me? what they have written I do not deſpiſe, they were highly enlightned and experienced Philoſophers, and would defend their writings ſufficienly, if they were alive: and what I write, I am alſo able to maintain.

Do thoſe men think, that the writings of *Geber* and *Lully* are to be underſtood according unto the bare letter? ſhew me a tincture of gold which was made by the writings of *Geber* or *Lully*? if it were ſo, then every idiot or novice, that could but read Latine, would not only by their writings be able to make the Tincture of gold, but alſo the Philoſophers-ſtone it ſelf, whereof they have written at large; which doth not follow, becauſe it is ſeen by daily experience, that the moſt worldly learned men ſpent many yeers, and have been at vaſt charges, and taken great paines and ſtudied in their books day and night, and found not the leaſt thing in them.

Now if ſuch Philoſophers were to be underſtood literally, doubtleſs there would not be ſo many poor decayed Alchymiſts. Therefore the writings of ſuch worthies are not to be underſtood according to the letter, but according to the myſtical ſenſe hid under the letter.

But becauſe the truth is eclipſed in their books by ſo many ſeducing and ſophiſtical proceſſes, there will hardly any man be able to pick it out from ſo many ſeducements, unleſs a light from God be given to him firſt, whereby he may be able ſo to peruſe the darke writings of thoſe men, that he know how to ſeparate the parabolical ſpeeches from thoſe that are true in the letter it ſelf: or if an honeſt godly Chymiſt by the grace of God in his labours do hit upon the right ſteps, and yet do doubt, whether he be in the right way or no, then by reading of good and true Philoſophers books, he may at laſt learn out of them the firme and conſtant truth: elſe hardly any ones deſire may be obtained out of their books, but rather after the pretious time ſpent, means and health waſted, a man ſhall be forced to fall a begging at laſt.

In like manner, if the true tincture be taken from copper the reſt is no more a metal, nor by any Art [or force of fire can be reduced to a metallical ſubſtance.

N. B. But if you leave ſome tincture in it, then it may be reduced into a brittle gray body, like unto iron but brittle.

Another way to extract a good Tincture out of gold by the help of the liquor of ſand or pebles.

TAke of that gold calx (which was precipitated with the oyle of ſand) one part, and three or four parts of the liquor of cryſtals or of ſand, mix the gold calx in a good crucible with the liquor, and ſet this mixture into a gentle heat ſo that the moyſtneſs may evaporate from the oyle of ſand which is not eaſily done; for the peble or ſand, by reaſon of their dryneſs keep and hold the moyſteneſs, and will not let it go eaſily; it riſeth in the pot or crucible, as borax or Allome doth when you calcine them; therefore the crucible muſt not be filled above half, that the liquor together with the gold may have roome enough, and do not run over the pot: and when it riſeth no more, then ſtrengthen the fire, till the pot be red-hot. The mixture ſtanding faſt, put a lid upon it, which may cloſe well, that no coals, aſhes or other impuritie may fall into it, and give it ſo ſtrong fire in a winde furnace, that the liquor together with the gold-calx may melt like water; keep it melting ſo long, till the liquor and gold together be like unto a tranſparent faire ruby, which will be done in an houres time or thereabouts; then powre it forth into a clean copper morter, let it coole, and then make it into powder, and powre ſpirit of wine upon it for to extract, which will look like unto thin blood: and it will prove more effectual in the uſe, then the above deſcribed Tincture.

The reſidue from which the Tincture is extracted, muſt be boyled with lead, and precipitated and driven off as you do oares, and you will get the remaining gold, which went not into the ſpirit of wine: but it is very pale and turned like unto ſilver in colour, which if it be melted through Antimony, it recovereth its former colour without any conſiderable loſs in the weight. How the melting in crucibles, and boyling of the remaining gold is to be done ſhall be more punctually ſet down in the fourth part, I know ſeveral other fine proceſſes, for to extract the colour eaſily out of the gold, but becauſe the gold muſt be firſt made fit for it by melting in the crucible, and that it is not pertinent to ſpeak of that operation here in this ſecond part, therefore it ſhall be reſerved for the fourth, where you ſhall be informed at large, not onely how to prepare gold, Antimony and other minerals, and make them fit for extraction, but alſo how to reduce them into a tranſparent, ſoluble and fire-proof ruby (which are none of the meaneſt medicines) and as it was done here with the gold, ſo you may proceed likewiſe with other metals and minerals for to extract their colours. And therefore being needleſs to deſcribe each metals tincture by it ſelf, all the proceſſes of them ſhall be diſcloſed in one, *viz.* in that of the gold. The book would grow too big, if I ſhould deſcribe them ſeverally, which I count needleſs to do. Let this ſuffice for this ſecond part, that we be taught how to extract out of the gold its colour after a common way. Which indeed are good medicines, but for ought I know of no uſe in Alchymie. But he that ſeeketh to have a true Tincture out of the gold, let him endeavor firſt to deſtroy the gold by the univerſal Mercury, and to turn the inſide outward, and the outſide inward, and proceed further according unto art, then the ſoul of gold will eaſily joyn it ſelf with the ſpirit of wine, and come to be a good medicine, whereof more in my treatiſe *de auro potabili* is handled. If one know the *Chalybs* of *Sandivogius*, which is well to be had, he might with little labour quickly get a good medicine: but becauſe we ſhew our ſelves ſtill ungrateful children unto God, therefore it is no marvel, that he withdraweth his hand from us, and leaveth us in errors.

What further may be done with the liquor of pebles.

Many more profitable things, as well in Alchymie, as in medicine may be compaſſed by the oyle of ſand: as for example, to make faire painting colours out of metals, which abide in all Elements: Alſo to frame all ſort of tranſparent hard ſtones out of cryſtal, which in beauty are like unto the natural, yea fairer ſometimes: alſo how to make many fair Amauſes and the like profitable arts: but they belonging not to this ſecond part, ſhall be reſerved for the fourth, where all ſuch ſhall be taught very punctually with all the circumſtances thereunto relating.

How by the help of this liquor to make trees to grow out of metals; with their colours.

Although this proceſs in Phyſick may be of no great uſe: yet in regard that to a Chymical Phyſitian it gives good information of the condition of natural things, and their change. I thought it not amiſs to ſet it down here.

Take of the above deſcribed oyle made of ſand pebles or cryſtals as much as you pleaſe, mixe therewith a like quantity of the lixivium of Tartar, ſhake both well together, ſo that the thick liquor may not be perceived in the lixivium, but be throughly incorporated therewith, both being turned to a thin ſolution, and then your water is prepared, wherein the metals do grow.

The metals muſt be firſt diſſolved in their proper corroſive *Menſtruum*, and the *Menſtruum* muſt be quite abſtracted from thence again, but not too hard, that the calx of the metal may not grow red-hot, whereby its growing vertue would be taken from it. Then take it out of the little glaſs-body, and break it in peeces about the bigneſs of a pulſe, and lay them in the above deſcribed liquor in a cleer bright glaſs, that the growing of the metals may be diſcerned through it, and as ſoon as the prepared metals are taken out of the glaſs body, they muſt be kept from the aire, elſe they loſe their growing vertue. Therefore thus drye they muſt be broken in peeces,and laid in the bottome of the glaſs (wherein the liquor is) a fingers breadth one from another aſunder, and muſt not be laid together on a heap: The glaſs muſt ſtand ſtill in a quiet place, and the metal will preſently ſwell in it and thruſt forth ſome bulks,out of which branches and twigs do grow, ſo finely that one ſhall admire at it: and let none think that this growing ſerveth onely for to pleaſe the eye, for ſome ſpeciall thing is hid in it: for all ſand or pebles, although they be white, inviſibly containeth a hidden tincture or goldiſh ſulphur, which none without experience will be able to believe; for if for a time you digeſt the pure filings of lead in it, there will gold come to ſtick to the outſide thereof (which gold may be waſhed off with water) and lead will look as if it were gilded. Which gold came from no where elſe but from ſand or pebles, although they were white and clear, ſo that it could not be perceived in them It ſheweth alſo its meliorating vertue, when the metals do grow therein, and for a certain ſpace of time are digeſted therewith. For it may be ſeen apparently, that the metals in the growing do increaſe from this liquor, and attract what is for their turn; which hence alſo may be perceived, that when but as much as the bigneſs of a pea groweth therein, it will grow twice or thrice as big, which is worthy to be conſidered of. Alſo the pebles or ſand-ſtones are the natural matrixes of metals, and there appeareth a great ſympathy between them, eſpecially between the unripe metals and them; as if nature ſhould ſay to ſuch raw or unripe metals, return into thy mothers wombe, and ſtay there the due time, till you have attained there to perfect ripeneſs, for you were taken thence too ſoon againſt my will. Further out of this liquor there may be made a good borras to reduce the metals thereby. There may be made alſo with this liqour faire glaſed and firme colours upon earthen veſſels like unto Porcellan or China. Alſo by boyling it with water, a tender impalpable ſnow-white earth may be precipitated out of it, whereof there can be made veſſels like unto Porcellan.

Many other uſeful things may be brought to paſs thereby in mechanical buſineſſes, needleſs here to relate.

Alſo the unripe and volatile minerals may be tyed and ripened thereby, ſo that not only they may be the fitter to be uſed in Phyſick, but alſo the volatile gold and ſilver contained in them may be ſaved thereby, whereof more in the fourth part.

N. B. Hither belongs alſo the proceſs of the ſpirit of lead, virgins-milk and Dragons blood.

Of the ſpirit of urine and of the volatile ſpirit of ſalt Armoniack.

OUt of urine or ſalt Armoniack a powerful and penetrating ſpirit may be made ſeveral wayes, which not only is to be uſed in phyſick for many diſeaſes, but is alſo found very uſeful in mechanical and Chymical operations, as followeth.

Take of the urine of ſound men living chaſte gather a good quantity together in a wooden veſſel, let it ſtand for its time to putrefie, and diſtil a ſpirit thereof, which afterward in a great glaſs retort with a wide neck muſt be rectified over calcined Tartar, and ſtill that which cometh over firſt, may be ſaved by it ſelf, and ſo the ſecond and third alſo, the ſtrongeſt may be uſed for the preparing of metallical medicines and the weaker for a medicine alone by it ſelf, or elſe mingled with fit vehicles: and the ſtronger may ſerve for the preparations of metallical medicines: the ſalt which in the rectification cometh over with the ſtrongeſt ſpirit; may be put to the weakeſt, to make it the ſtronger, or elſe it may be ſaved by it ſelfe in a good ſtrong glaſs.

But becauſe the ſpirit of urine is tedious to make, therefore I will ſhew, how to get it eaſier out with ſalt Armoniack. The preparation is thus:

Take of ſalt Armoniack, and *lapis calaminaris*, ana. make each by it ſelf into powder, and then mixe them together, and caſt of it into the red hot veſſel at once no more then ℥ß. or ℥i. Unto the veſſel there muſt be applyed a great receiver: for this ſpirit goeth with ſuch a force and power, that it were impoſſible to diſtil it in a retort without danger or loſs, for I broke more then one receiver with it, before I did invent this inſtrument. The ſpirits being wel ſettled in the receiver, caſt in more of your mixture; this continue ſo long till all your matter is caſt in; then take off the receiver, and powre the ſpirit into a ſtrong glaſs, which muſt be well cloſed at the top, but not with wax and a bladder, becauſe it ſofteneth the wax and doth penetrate through the bladder; but firſt ſtop it with paper, then melt Lacca or ſulphur and powre it upon it, ſo that it come to be very well cloſed, and then it will not be able to exhale, or thou mayeſt get ſuch glaſſes made, as in the fifth part ſhall be taught, for to keep all the ſubtle ſpirits in them, for more ſecurity ſake. And this ſpirit if no water have been mixt with it in the receiver needeth no rectifying: but he that will have it ſtronger yet, may rectifie it through a glaſs retort, and ſo keep it for uſe.

And this is the beſt way to make a ſtrong ſpirit out of ſalt Armoniack: the ſame may be done alſo, by taking of filed Zinck, in ſtead of *lapis calaminaris*: alſo by adding of ſalt of Tartar, ſalt made of the Lee of wood aſhes, unquencht lime, and the like: but the ſpirit is nothing neer ſo ſtrong (although all thoſe things may be done with it, that are done with the former) as that which is made with *lapis calaminaris* or Zinck.

The proceſs or the manner of making it is this.

Take ℔i. of ſalt Armoniack made into powder, and as much of ſalt of Tartar, mixe both together by the help of a lye made of Tartar, or only with common water, ſo that all come to be like a pap, and caſt in one ſpooneful thereof at once, into a diſtilling veſſel, then caſt in more till you have ſpirit enough.

N. B. The ſalt of Tartar may alſo be mixed drye with the ſalt Armoniack without any lye or water, and ſo diſtilled: but it is not ſo good, as when the mixture is tempered with lye or water: for if it be caſt in dry, the ſpirit will come over in the form of a volatile ſalt: but if the mixture have been moyſtened, then moſt part thereof will come over like a fiery burning ſpirit: in like manner alſo the mixture of lyme and ſalt Armoniack may be tempered moiſt, and it will yield more ſpirit then if it be diſtilled dry.

It may be asked: why *lapis calaminaris*, Zinck and unquencht lyme, calcined Tartar, ſalt of pot-aſhes, fixed ſalt nitre or the like things prepared by the fire, muſt be added unto ſalt Armoniack, and whether it be not as good to add ſome bolus, or other earth, (as uſually is done to other ſalts) and ſo to diſtill a ſpirit of it? To which I anſwer, that there are two ſorts of ſalts in ſalt Armoniack, *viz.* a common acide ſalt, and a volatile ſalt of urine, which without mortifying of one of them, cannot be ſeparated: for as ſoon as they feel the heat, the volatile ſalt of urine carrieth the acid ſalt upwards, and they both together yeild a ſublimate, of the ſame nature and eſſence with common ſalt Armoniack which is not ſublimed, ſalt Armoniack is purer then the common. And no ſpirit would come over from it, if it ſhould be mingled with bole, brick, duſt, ſand, or any other ſtrengthleſs earth, and ſo diſtilled, but the whole ſalt as it is of it ſelf (leaving its earthy ſubſtance behinde) would ſublime thus dry: but that it falleth out otherwiſe with the *lapis calaminaris* (which is alſo like an earth) ſo that a ſeparation of the ſalts is wrought thereby, and a volatile ſpirit commeth over, the reaſon is that the *lapis calaminaris* and Zinck are of ſuch a nature, that they have a great affinity with all acid things, and do love them, and are loved by them likewiſe (whereof ſome mention hath been made in the firſt part) ſo that the acide ſalt ſticks to it in the warmth and uniteth it ſelf with it, and the ſalt volatile is made free, and diſtilled into a ſubtle ſpirit; which could not have been done, if the acide ſalt had not been kept back by the *lapis calaminaris* or Zinck. But that a ſpirit is diſtilled off by addition of fixed ſalts, the reaſon is becauſe that fixed ſalts are contrary unto acid ſalts, and (if they get the upperhand) do kill the ſame, and rob them of their ſtrength, whereby thoſe things which are mixed with them are freed from their bond: and ſo it fals out here with ſalt Armoniack, that when by addition of a vegetable fixd ſalt the acidity of the ſalt Armoniack is killed, the ſalt of urine, which formerly was bound therewith, gets its former freedom and ſtrength, and ſublimated turnes into a ſpirit. Which could not have been done, if common ſalt had been added to the ſalt Armoniack in ſtead of ſalt of Tartar; for the ſalt of urine would thereby (as by a far greater enemy be killed and kept back, ſo that it could yield no ſpirit. I thought it fit to give notice hereof to the ignorant (not for thoſe, who knew it before) and to the unknowing it will do much good, and that they may have a light for other labours: for I have many times ſeen, and ſee it ſtill by daily experience, that the moſt part of your vulgar Chymiſts, whatſoever they do (having got it either by reading, ſeeing or hearing) they hurle it over like botchers, and are not able to give any ſolid reaſon, why this or that muſt fall out in ſuch or another manner, not labouring to finde out the natures and conditions of ſalts, minerals and other materials but contenting themſelves onely with the Receipt, ſaying this or that Author hath written ſo, and therefore it muſt be ſo, whereas many times ſuch books are patcht up out of all ſorts of authors. And thoſe that ſtick to ſo many books, will hardly ever come to get any good, but are lead out of one Labyrinth into another, ſpending their life miſerably in watching and cares: but if they would firſt ſeriouſly conſider things, and learn to know nature, and then take their worke in hand, then they would ſooner attaine unto true knowledge; and ſo much of this matter by the way. I hope that he that hath been in error will be pleaſed with it, and the knowing will not grudge to have it imparted to the ignorant.

That which remaines after the diſtillation is done, is alſo good for uſe: if the addition have been of ſalt of Tartar, a melting powder may be made of it, to reduce metals. Of *lapis calaminaris* or Zinck, yeilds *per deliquium* a clear, white and heavy ſharpe oyle; for the ſharper part of ſalt Armoniack, which did not turn to ſpirit, hath diſſolved the *lapis calaminaris*, and is almoſt of the ſame vertues for external uſe in Chyrurgury with that, which above in the firſt part which was taught to be made out of *lapis calaminaris* and ſpirit of ſalt, ſave onely that this in the diſtilling doth not yeild ſo ſtrong a ſpirit as the other, but onely yeilds a ſharpe ſublimate.

Of the uſe and vertue of the ſpirit of ſalt Armoniack.

THis ſpirit is of a ſharppenetrating eſſence, and of an airie, moyſt and warm nature; and therefore may with credit be uſed in many diſeaſes, 8. 10. 12. (more or leſs) drops thereof uſed in a convenient vehicle, doe immediately penetrate all the body over, cauſing ſuddaine ſweating, opening the obſtructions of the ſpleen, and diſperſing and expelling many malignities by ſweat and urine, it cureth the quartane, colick, the ſuffocation of the Matrix, and many more diſeaſes.

In brief, this ſpirit is a ſafe, ſure and ready medicine for to diſperſe and expel all tough, groſs and venemous humors. Alſo, this ſpirit acteth his part externally, quenching all inflammations, curing the Eryſipelas and Grangrene; it allayeth the pains of the gout, clothes being dipt in it and applied: and although it draw bliſters, it matters not; laid to the pulſe, it is good in ardent feavers, it aſſwageth ſwellings and paines; diſcuſſeth congealed blood, helpeth ſtrayned limbs, and benummed nerves: onely ſmelled unto it cureth the megrim and other Chronical diſeaſes of the head: for it diſſolveth the peccant matter & evacuateth it through the noſtrils; it reſtoreth the loſt hearing, being externally laid on with a little inſtrument fit for the purpoſe. Alſo in the obſtructions of womens courſes applyed by a fit inſtrument in a ſpiritual way, openeth preſently and cleanſeth the wombe and maketh women fruitful,*&c.* Mingled with common water, and held in the mouth, aſſwageth the tooth-ach,proceeding from ſharp humors which are faln into the teeth.A little of it applyed in a gliſter, killeth the wormes in the body, and allayeth the colick.

This ſpirit can alſo further be uſed to many other things, eſpecially by means thereof many pretious and effectual medicaments may be made out of metals and minerals, whereof ſome ſhall be deſcribed as followeth.

N. B. There is yet another matter, which is found every where and at all times, and is to be got by every one without diſtillation and charges, and is as good for the abovesaid diſeaſes, as the diſtilled ſpirit,and if all men knew it, there would not be found every where ſo many ſick people, nor ſo many Doctors and Apothecaries.

To diſtil a blood red oyle of vitriol by the help of the ſpirit of urine.

Diſſolve Hungarian or other good vitriol in common water, and let it run through a filtring paper, powre of this ſpirit upon it ſo much, till all the green be vaniſht, and the water be made cleer,and a yellow ſulphur be ſettled: then powre off the cleere, and the reſt which is muddy, powre together in a *filtrum*, that the moyſture may run off, and the earth of the vitriol remaine in the paper, which you muſt dry, and diſtil to a blood-red oyle, which will open the obſtructions of the whole body, and perfectly cure the epilepſie. The cleere water muſt be evaporated dry, and there will remaine a ſalt, which being diſtilled, yields a wonderful ſpirit. Before it be diſtilled, it is a *ſpecificum purgans*, whereof 8. 10. 12. to 24. grains taken, may ſafely be uſed in all diſeaſes.

The tincture of Vegetables.

SPices, ſeeds or flowers being extracted therewith and digeſted and diſtilled, the eſſence of them will come over with it, in the form of a red oyle.

Vitriol of copper.

IF you powre it upon calx of copper, made by firing and quenching it againe, it will extract within an houres time a faire blew colour, and having diſſolved as much thereof as it could, powre it off and let it ſhoote in a cold place, and you will get a fair sky coloured vitriol, a ſmal quantity whereof will cauſe ſtrong vomits; the reſt of the vitriol remaineth a blew oyle, good to be uſed in ulcers.

The Tincture of crude Tartar.

IF you take common crude Tartar, and powre of this ſpirit upon it, and ſet it in digeſtion, the ſpirit will extract a blood-red Tincture, and if the ſpirit be abſtracted from it, there will remaine a pleaſant red oyle, of no ſmall vertue and power.

To make the oyles or liquors of ſalts.

THis ſpirit alſo diſſolveth cryſtals and other ſtones, they being firſt diſſolved, precipitated and reduced to impalpable powders, turning them into oyles and liquors, good to be uſed in Alchymy and Phyſick.

To precipitate all metals with it.

ANy metal being diſſolved in an acid ſpirit can be precipitated better and purer therewith, then with the liquor of the ſalt of Tartar; for *Aurum fulminans* which is precipitated with it fulminateth far ſtronger then if it were done with oyle of Tartar.

℞. Some juyce of Lemon with the ſolution of gold, before it be precipitated, and then not all the gold will precipitate, but ſome of it wiil remaine in the ſolution, and in time many ſmall green ſtones (not unlike unto common vitriol) will appear; which in a ſmall doſe will purge all noxious humors.

The oyle and vitriol of ſilver.

IF you diſſolve ſilver in *Aqua fortis*, and powre ſo much of this ſpirit into it till it ceaſeth to make a noyſe, ſome of the ſilver will precipitate in the form of a black powder, the reſt of the ſilver remaineth in the liquor: the phlegme abſtracted from it in Balneo, till it get a skin at the top, and then ſet into a coole place, there will grow white cryſtals in it, which being taken out and dryed are a good purge in madneſs, dropſie, feavers and other diſeaſes, ſafely and without danger to be uſed to young and old. The reſt of the liquor which did not cryſtalliſe may be extracted with ſpirit of wine, and the fæces being caſt away the extraction will be pleaſanter. The ſpirit of wine abſtracted from it, there will remaine a medicine of no ſmall value in all diſeaſes of the braine.

To extract a red Tincture out of Antimony or common ſulphur.

BOyle ſulphur or Antimony made into powder in a lye of the ſalt of Tartar, till the lye turn red, and powre this ſpirit upon it, and diſtil gently in a *Balneum*, and there will come over a faire Tincture with the volatile ſpirit, ſilver anoynted therewith will be guilt, though not laſtingly. It ſerveth for all diſeaſes of the lungs.

How to ripen Antimony and common ſulphur, ſo that ſeveral ſorts of ſuch ſmels, as vegetables have, ariſe from thence.

DIſſolve Antimony or ſulphur in the liquor of pebles or ſand, coagulate the ſolution to a red maſs; upon this maſs powre ſpirit of urine, and let it extract in a gentle warmth. The ſpitit being coloured red, powre it off, and powre on other ſpirit, let it extract likewiſe, and this you muſt iterate ſo often, till the ſpirit will extract no more tincture; then powre all the extracts together and abſtract the ſpirit of urine from it in Balneum through a limbeck, and there will remaine a blood red liquor, and if you powre upon this ſpirit of wine it will extract a fairer tincture then the former was, leaving the fæces behinde, and this tincture ſmelleth like garlick: and if it be digeſted three or four weeks in a gentle warmth, it will get a very pleaſant ſmel, like unto the yellow prunes or plums: and if it remaine longer yet in digeſtion, it will get a ſmel not inferior to musk and ambar; This Tincture having been digeſted a long time, and got ſeveral ſmels, is not only notably by the fire increaſed in pleaſantneſs of ſmel and taſte, but alſo in vertue: for ſo many and various ſweet ſmels are perceived in it, that it is to be admired, which variety and exaltation proceedeth onely from the pure and ripening ſpirit of urine for there is hid in it a fire, which doth not deſtroy but preſerve and graduate all colours, whereof in another place more ſhall be ſaid.

N.B. Betwixt the ſpirit of urine and the animal and mineral Copper there appeareth a great ſympathy; for it doth not onely love copper above all other metals, and mingleth eaſily with it, and maketh it extraordinary faire and of good uſe in Phyſick, but it prepareth it alſo to ſuch a medicine, whereby all venereous ſores (both by inward and outward uſe) how deep ſo ever they took roote in the blood, without the uſe of any other medicaments, are perfectly cured; it maketh fruitful and barren according as it is uſed; it cleanſeth the matrix, hindreth the riſing thereof, and miraculouſly furthereth womens courſes that have been ſtayed, above all other medicamenes of what name ſo ever.

If this ſpirit be mingled with the volatile (but not corroſive) ſpirit of vitriol or common ſalt there will come a ſalt out of it, which is inferior to none in fuſibleneſs, and uſeful both in Alchymy and Phyſick.

N.B. The liquor of the ſalt of Tartar, and the ſpirit of wine do not mixe without water, this being the mean partaking of both their natures, and if you add unto it ſpirit of urine it will not mingle but keep its own place: ſo that theſe three ſorts of liquors, being put in the ſame glaſs, and though they be ſhaked never ſo much will not encorporate for all that: the liquor of the ſalt of Tartar keepeth to the bottome, next to it will be the ſpirit of urine, and on the top of that is the ſpirit of wine: and if you powre a diſtilled oyle upon it, they will keep uppermoſt of all, ſo that you may keep four ſorts of liquors in one glaſs, whereof none is mingled with the other.

Although this be of no great profit, yet it ſerveth for to learn thereby the difference of ſpirits.

Of the ſpirit and oyle of Hartſhorn.

TAke Hartſhorn, cut it with a ſaw into peeces, of the bigneſs of a finger, and caſt in one of it at a time in the aforeſaid diſtilling veſſels, and when the ſpirits are ſettled, then another, and continue this untill you have ſpirits enough; and the veſſel being filled with the peeces that were carryed in, take them out with the tongs, and caſt in others, and do this as often as is needful. The diſtilling being finiſhed, take off the receiver, and powre into it dephlegmed ſpirit of wine, which will cleanſe the volatile ſalt: powre the oyle with the ſpirit and ſalt volatile through a filtring paper made wet firſt & lying in a glaſs funnel, and the ſpirit of wine together with the ſpirit of Hartſhorn and the volatile ſalt will run through the paper, and the blackiſh oyle will ſtay behinde, but it muſt quickly be powred out, elſe it will through after

them.

them. The ſpirit together with the volatile ſalt rectifie through a retort, and the beſt part of the ſpirit will come over together with the ſpirit of wine and volatile ſalt: and when the phlegme is coming, take off the ſpirit, which is come over, that the naughty phlegme may not come amongſt it; keep it wel, for it is very volatile, the oyle may be mingled with ſalt of Tartar, and rectified through a glaſs retort, and ſo it wil be cleer; if you will have it fairer, you muſt rectifie it with ſpirit of ſalt.

The firſt, which is done with ſalt of Tartar, is of more vertue; it cureth the quartane, provoketh ſweating extreamly, cureth all internal wounds and pains, which were cauſed by fals, blows, or other wayes: 6. or 8. 10. to 20 drops of it taken in wine and ſweated upon it in the bed. The ſpirit is very good for all obſtructions of the whole body, from ℈ß. to ʒß. thereof taken in a fit vehicle, provoketh urine, and forceth down womens courſes, it cleanſeth the blood and maketh ſweat mightily. In the Plague, Pox, Leproſie, Scurvy, *Melancholia Hypochondriaca*, malignant feavers and the like where ſweating is neceſſary, it proveth a rare medicine.

To make the ſpirit of mans haire an excellent medicine.

AFter the ſame manner you may make ſpirits out of all kinde of horns and claws of beaſts: but ſince by reaſon of their ill ſmel the uſe of them is not liked of (though in ſeveral heavy diſeaſes, as in the fits of the mother and Epilepſie, they do admirably well:) therefore I will acquieſce. However it is worth obſerving, that the ſpirit made of mans-haire is not to be rejected in metallical operations; for it diſſolveth the common ſulphur, and reduceth it into a milk, which by further ripening may be turned into blood, the like whereunto no ſpirit is able to do. The ſame ſpirit may alſo of it ſelf, without addition of ſulphur be fixed into a ruby; but that which is ripened with ſulphur is the better: and if it be brought ſo far by the fire, that it have loſt its ſtink and be made fixe, then it will be able ſufficiently to pay for the paines and coals beſtowed upon it.

N. B. Hither belongeth the Proceſs to powre diſſolved metals upon filed hartſhorn, and ſo to diſtil them.

Of the oyle of Ambar.

AMbar yeildeth a very pleaſant oyle and of great vertue, eſpecially the white Ambar: the yellow is not ſo good and the black is inferior to this: for by reaſon of its impurity it cannot be well uſed inwardly: and there cometh over alſo along with it a volatile ſalt and an acid water, which muſt be ſeparated: the water (for ought that I know) is of little vertue: the ſalt if it be ſublimed from the ſalt of Tartar and purified, is a good diuretick, and in the ſtone and the Gout, and may ſucceſſefully be uſed both inwardly and outwardly. The oyle if it be rectified, eſpecially that which comes over firſt, is an excellent medicine againſt the plague, epilepſie, riſing of the mother and megrim, 6. 8. 10. to 20. drops being taken thereof at once, and the noſtrils alſo being anoynted therewith for to ſmel to it: and it is to be obſerved, that when it is rectified through ſpirit of ſalt, it proveth much cleerer, then done by it ſelf without addition: but if it be rectified with ſalt of Tartar, it is of much more vertue: though it fall not ſo cleer, as that which is done by ſpirit of ſalt.

N. B. If it be rectified over a ſtrong *Aqua Regia* having before once already been rectified with ſpirit of ſalt, it will turn ſo ſubtle, that it is able to diſſolve iron or copper in ſome ſort, and to reduce them into good medicines: and in this ſecond rectification by *Aqua Regia* all will not come over, but part of it will be coagulated by the corroſive water, ſo that it turneth thick, like unto maſtick, which in the warmth is ſoft, and may be handled with ones fingers like wax: but in the cold it is ſo hard, that it may be broken and made into powder, and gliſtereth like gold.

Of the oyle of ſoot.

OF the ſoot, which is taken from Chimneys, where nothing is burnt elſe but wood,there may be diſtilled a ſharp volatile ſalt and a hot oyle. The ſalt is in vertue not unlike unto that which is made of hartſhorn or ambar; and it quencheth inflammation, from what cauſe ſo ever it do proceed: The oyle may without rectification externally be uſed very ſucceſſefully for all loathſome ſcabs and for a ſcald head,*&c.* But if it be rectified, as hath been taught to be done with the oyle of Tartar,of Ambar,and of Hartſhorn;then it may ſafely uſed inwardly, as the above written oyles are uſed; for it be doeth prove, as good as theſe, yea better in ſome ſpecial caſes.

How to make a good oyle out of ſoot without diſtilling.

BOyle the ſoot in common water, till the water turn blood-red (urine is better then water) and ſet this ſolution (being in an earthen pot) in winter time into the greateſt froſt ſo long till all in the pot be frozen into one peece and turned white: then brake the pot and the ice, and in the midſt thereof you will finde the hot oyle unfrozen and liquid in colour like blood, which is not much inferior in vertue unto that which is diſtilled, yet afterward it may be rectified, and ſo exalted in its vertue, when you pleaſe, and is to be noted,that this ſeparation doeth only ſucceed in the greateſt froſt and cold, and not elſe.

Of the ſpirit and oyle of haney.

OF honey there may be made a ſubtle ſpirit and a ſowre vinegar, if it be mingled with twice as much of pure calcined ſand and ſo diſtilled;and it falleth muchbetter yet if it be made with the flores of Antimony, which were taught to be made in the firſt part, whereby the ſpirit is increaſed in its vertue, and its running over hindred thereby; and ſo diſtilling it, there will come over a pleaſant ſpirit, a ſharp vinegar and ſome red oyle alſo, which muſt be ſeparated: the ſpirit after the rectification inwardly uſed is good in all diſeaſes of the lungs. It openerh and enlargeth the breaſt, ſtrengthneth the heart, takes away all obſtructions of the liver and ſpleen: it diſſolveth and expelleth the ſtone, reſiſteth all putrefaction of the blood; preſerveth from and cureth the plague; all agues, dropſies, and many other diſeaſes, daily uſed from ℈j. to ʒj. taken with diſtilled water proper for the diſeaſes: the ſowre vinegar coloureth haire and nayles as yellow as gold: it cureth the itch and ſcabs of the skin; it cleanſeth and healeth old and new wounds, they being bathed and waſhed therewith.

The red oyle is too ſtrong to be uſed of it ſelf, it may be mingled with the ſubtle ſpirit which came over firſt and ſo uſed, and the ſpirit will be exalted thereby in its vertue.

Of the oyle and ſpirit of ſugar.

IN the ſame manner as hath been taught of honey, there is alſo made a ſpirit and oyle of ſugar, *viz.* adding pure ſand to it; or (which is better) of the flores of Antimony, and then according to the rules of Art one ſpoonful after the other of this mixture caſt in, it will yeild a yellow ſpirit, and a little red oyle, which after the diſtillation muſt be digeſted in Balneo ſo long together, till the ſpirit have aſſumed the oyle and be turned thereby very red colour; it needeth not to be rectified, but may daily be uſed either by it ſelf, or with ſuch vehicles as are proper for your purpoſe: in all it is like in vertue unto that which was made of honey: yet this of ſugar is more pleaſant then the other: it reneweth and reſtoeth all the blood in man, in regard that it received great vertue from the diaphoretical flores of Antimony; and this ſpirit may fitly be uſed in all diſeaſes, it can do no hurt, neither in cold nor hot diſeaſes: it doth help nature mightily, and doth ſo much good, that it is almoſt beyond belief. Eſpecially if for a time it be daily uſed from ℈j. to ʒj. The reſidue of it is black, and may be kept for the ſame uſe again, *viz.* for an addition to other honey or ſugar, or elſe you may ſublime it again into flores in the furnace deſcribed in the firſt part, or in the furnace deſcribed in the fourth part of this book with an addition of iron or Tartar or ſalt nitre into a *Regulus*, &c.

To diſtil an excellent ſpirit and a blood red tincture of corals and ſugar.

IF you mix ſugar with red corals made into powder and diſtil it, there will beſides the ſpirit come over a blood-red Tincture like a heavy oyle, which is to be joyned with the ſpirit by digeſtion in Balneo, and it will be as vertuous as that which was made with Antimony diaphoreticum. It doeth perfectly and laſtingly cure epilepſie in young and old; it cleanſeth the blood from all filth, ſo that leproſie together with its ſeveral ſpecies may be cured thereby, *&c.* Its uſe is the ſame as was taught above of the Antimonized ſpirit of ſugar.

Of the ſpirit of Muſte or new wine.

TAke ſweet Muſte or juyce of grapes, as ſoon as it is ſqueezed out, boyle it to the conſiſtency of honey, and then mix it with ſand, corals, or (which is better) with flores of Antimony, and ſo diſtil it, and it will yield ſuch another ſpirit as that which is made of honey or ſugar: onely that this is ſomewhat tarter then that of honey. With honey, ſugar and the juyce of grapes ſeveral metals may be diſſolved in boyling and ſo prepared and made up into divers medicaments, both with and without diſtillation, after the ſame manner as was taught above with Tartar: for honey, ſugar and the juyce of grapes, are nothing elſe but a ſweet ſalt, which by fermentation and addition of ſome ſowre thing, may be changed into a ſowre Tartar, in all like unto that which is gathered in the wine veſſels. There can be made alſo a Tartar out of cherries, pears, apples, figs, and all other fruit, yielding a ſweet juyce: as alſo of rye, wheate, oates, barley and the like, whereof in the third part more ſhall be ſaid.

For every ſweet liquor of vegetables, if it be turned inſide out, by fermentation may be changed to a natural ſowre Tartar; and it is utterly falſe, that (as ſome do ſuppoſe) onely wine yeilds Tartar, which by daily uſe made of it by thoſe that have very hungry ſtomachs (like Woolves) indiſtinctly together with the nouriſhment went into the limbs, and there turned to a ſtony matter. If this were true, then in cold countries, where no wine groweth, men would not be troubled with the gout or ſtone; the contrary whereof is ſeen daily: though I muſt confeſs, that among all vegetable none yeildeth more then the vine, the concurrent acidity being cauſe thereof; for it turneth the ſweetneſs into Tartar: for the ſowrer the wine is, the more Tartar it yeildeth; and ſo much the ſweeter, ſo much the leſs Tartar. By this diſcourſe an induſtrious Chymiſt may eaſily come to know the original nature and proprieties of Tartar, and in default of wine, how to make it out of other vegetables, the common ſalt or the ſalt of Tartar may be diſtilled with honey, ſugar, or ſodden wine (*ſapa*) and it will yeild as ſtrong ſpirits, as that metals may be diſſolved with them, and they are not to be deſpiſed in Phyſick and Alchymie.

Of oyle Olive.

OUt of oyles made by expreſſion (as oyle olive, rape oyle, wallnut oyle, hempſeed oyle, linſeed oyle and the like) there may be diſtilled a penetrating oyle, uſeful both outwardly and inwardly, which is done thus: Take common potters clay not mingled with ſand, frame little bals of it, as big as a pigeons or hens-egg, burn them (but not too ſtrong) to a hard ſtone, ſo that they may attract the oyle; and when they are no more quite red-hot, but pretty hot, then throw them into oyle olive which is the beſt; let them lye in it, till they be quite ful and drunk of the oyle, which will be done in two or three hours (ſome caſt them red hot into the oyle, but amiſs, becauſe the oyle contracts thence an *Empyreuma*) Then take them out, and caſt in one or two of them at once into your diſtilling-veſſel made red-hot, and let it go; and within a while after carry in one or two more, and continue this till you have oyle enough. If the veſſel be full of the bals, take them out with the tongs or ladle, that you may proceed without let in your diſtillation, & in this maner you need not fear the breaking of your retort or receiver, or the burning of your oyle. The diſtillation being performed take off your receiver, powre the oyle that came over into a glaſs retort, and rectifie it from calcined Allome or Vitriol, and the Allome will keep back the blackneſs and ſtinck, and ſo the oyle will come over cleer, which muſt be yet rectified once or twice more with freſh calcined Allome, according to the intenſneſs of penetrating which you look for: that which cometh over firſt, ought ſtill to be caught by it ſelf, and you will get a very faire, bright and clear oyle, which is very ſubtle; but that which cometh after is ſomewhat yellow, and not ſo penetrating neither as the firſt; and therefore it is but for external uſe to extract flowers and hearbs therewith, and to make pretious balſames for cold and moyſt ſores. Alſo you may diſſolve with it ambar, maſtick, myrrhe and the like attractive things, and with wax and Colophony reduce it to a plaſter, which wilbe very good in venemous ſores and boyles, for to attract the poyſon and to heal them out of hand. If you diſſolve in it common yellow ſulphur made into powder, you will get a blood red balſame, healing all manner of ſcabs, and other like defects of the skin; eſpecially when you add to it purified *Spaniſh green*, and in hot ſores *Saccharum Saturni*, which in a gentle heat and by continual ſtirring about do eaſily melt and mingle therewith. It needeth not to be done in glaſſes, but may be done in an ordinary earthen pot or pipkin.

The uſe of the bleſſed oyle.

THe firſt and cleer is of a very penetrating nature : ſome drops thereof given in ſome *Aqua vitæ*, preſently ſtayes the colick, proceeding from windes that could not be vented ; as alſo the riſing of the mother, the navil being anoynted therewith : and a cold humor being faln upon the nerves, whereby they are lamed; if you do but anoynt them with this oyle, and rub it in with warm hands, it will quickly reſtore them , and therefore in regard of its preſent help may well be called *Oleum ſanctum.* If you extract plate of iron or copper with this oyle, it will turn deep red or green, and is a ſoveraigne remedy for to warm and dry up all cold and watery ſores. It conſumeth alſo all ſuperfluous moyſture in wounds and ulcerous ſores,as alſo all other excreſcencies of the skin: it healeth tettars and ſcald-heads and other like defects proceeding from ſuperfluous cold and moyſture. You may alſo diſſolve in it Euphorbium and other hot gums, and uſe them againſt great froſt, for what limb ſo ever is anoynted therewith no froſt how great ſo ever can do it any hurt. The balſames made with gum or ſulphur may be alſo diſtilled through a retort, and in ſome caſes they are more uſeful then the undiſtilled balſame.

Of the oyle of Wax.

IN the ſame manner may be diſtilled alſo the oyle of wax, the uſe whereof is in all like unto the former ; and for all cold and infirmities of the nerves, this is found more effectual yet then the former.

A Spirit good for the Stone.

OUt of the ſtones which are found in grapes, there may be diſtilled a ſowre ſpirit, which is a certain and ſpecifical remedy for the ſtone in the kidneys and bladder, and alſo for all paines of the goute. It is not onely to be uſed internally but alſo externally, wetting clothes in it, and applying them to the places affected, and it will aſſwage and drive away the paines.

Of the ſpirit or acid oyle of Sulphur.

TO reduce ſulphur into a ſowre ſpirit or oyle hath been ſought hitherto by many, but found by few. Moſt of them made it in glaſs-bels, but got very little that way; for the glaſſes being quickly hot, could not hold the oyle, ſo that it went away in a ſmoak. Some thought to get it by diſtilling, others by diſſolving, but none of all theſe would do the feat. Which is the reaſon why now adayes it is found almoſt no where right and in the Drugſters and Apothecaries ſhops they uſually ſell oyle of Vitriol in ſtead of it, which by far is not to be compared in vertue to the oyle of ſulphur. For this is not onely of a far pleaſanter ſowre taſte, but in efficacy alſo much exceeds the other. And therefore being of ſo great uſe both in Phyſick and Alchymie, as in all hot diſeaſes, mingling the patients drink therewith, till it get a pleaſant ſowre taſte, for to quench the intolerable drowth, to ſtrengthen the ſtomach, to refreſh the lungs and the liver: Alſo externally for to cure the gangrene: Alſo for to cryſtalliſe ſome metals thereby and to reduce them into pleaſant vitriols, uſeful as well in Alchymie as Phyſick; I thought good to ſet down the preparation, though it be not done in this our diſtilling furnace, but in another way by kindling and burning it as followeth.

Make a little furnace with a grate, above which a ſtrong crucible muſt be faſtned reſting on two iron bars, and it is to be ordered ſo that the ſmoake be conveighed (not above by the crucible, but) through a pipe at the ſide of the furnace: the crucible muſt be filled with ſulphur even to the top; and by a cole-fire without flame be brought to burn and kept burning. Over the burning ſulphur, a veſſel is to be applyed of good ſtony earth like unto a flat diſh with a high brim, wherein is alwayes cold water to be kept, and whereunto the burning ſulphur do flame: Which thus burning its fatneſs conſumeth, and the acid ſalt is freed and ſublimed to the cold veſſel, where it is diſſolved by the aire, and in the form of a ſharpe oyle runs from the hollow veſſel into the receiver, which muſt be taken off ſometime, and more ſulphur ſupplyed in ſtead of that which hath been conſumed, to the end that the ſulphur may ſtill burn in the crucible: and beat with the flame to the cold head: and within few dayes you will get a great quantity of oyle, which elſe by the (*campana*) glaſs-bell in many weeks could not have been done.

N. B. Such a ſowre ſpirit or oyle may alſo be got by diſtillation together with the flores, *viz.* thus: If you take pieces of ſulphur as big as hens eggs, and carry them one after another into the hot diſtilling veſſel, a ſowre oyle together with flores will come over into the receiver, which muſt with water be ſeparated out of the flores and the water abſtracted from it againe in a cucurbit and in the bottome of your glaſs body you will finde the oyle, which in vertue and taſte is equal to the former, but you get nothing neer ſo much in quantity by this way, and if you do not look for the oyle, you may leave it with the flores, which by reaſon of their pleaſant acid taſte are much toothſomer to take then the ordinary ones.

To the courteous Reader.

THus I conclude this ſecond part; I could have ſet down more medicinal proceſſes in this Treatiſe: but having as many as will be a ſufficient guide for the diſtilling of other things alſo, I thought it good here to acquieſce; and whatſoever is proper for this Treatiſe, and hath been forgotten or omitted, ſhall be made amends for in the following parts.

FINIS.

THE
THIRD PART
OF THE
PHILOSOPHICAL FURNACES:

IN WHICH
Is deſcribed the Nature of the

THIRD
FVRNACE;

By the help whereof, and that without Stils, and Caldrons, and other
Copper, Iron, Tin, and Leaden Inſtruments,
various Vegetable burning Spirits, Extracts,
Oyles, Salts, *&c.*

By the help of a certain little Copper Inſtrument, and wooden
veſſels are made for Chymical and Medicinal uſes.

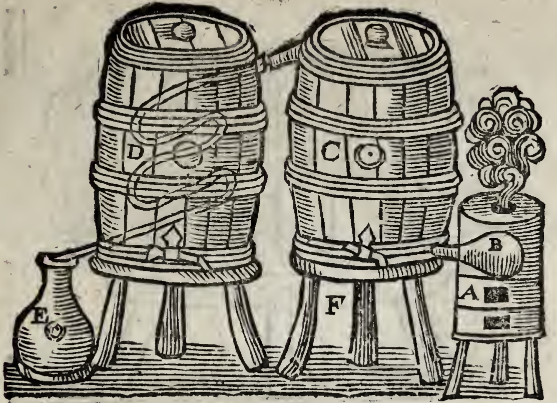
By JOHN RUDOLPH Glauber.

LONDON,
Printed by *Richard Cotes*, for *Tho: Williams* at the ſigne
of the Bible in *Little-Britain*. 1652.

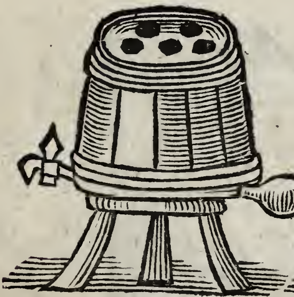
A Preface of the Copper Inſtrument and Furnace.

N*OW this Inſtrument is made of ſtrong Copper plates after the following manner. You muſt make two ſtrong hemiſpheares of Copper or Latten of the bigneſſe of a mans head (or thereabout) and joine them together with a moſt ſtrong ſoder, and that without tin, whereof the one muſt have a pipe: Now the pipe muſt be of a moſt exact roundneſſe, that it may moſt accurately fit the hole that is made with an auger or wimble to keep the water from flowing out like to a tap, of the length of one ſpan at leaſt, wider on the hinder part towards the globe, then on the forepart, which alſo muſt bee according to the bigneſſe of the globe, greater or leſſer, and be exactly joined with the beſt ſoder to its hemiſpheare, and the diameter of the forepart being very round like a tap, and moſt exactly filling the round hole muſt be of two fingers breadth. Now there is required to the foreſaid inſtrument or globe a certaine peculiar little furnace made of iron or copper, viz. moſt ſtrong* *copper plates, covered within with ſtones or the beſt lute, into which is put that globe like a retort, ſo that it may lye upon two iron barrels of the diſtance of a ſpan, or ſpan and halfe from the grate; the work whereof (that pipe) goeth forth of the furnace one ſpan at leaſt. The furnace alſo muſt have below a place for the aſhes, and above a cover with its hole for the letting forth of the ſmoke, and for regulating the fire, as you may ſee by the annexed figure. It muſt alſo below have a tree-foot on which the furnace muſt be ſet, and on the ſides two handles by the help whereof it may be removed from place to place; the which is very neceſſary; for it is not only uſed for the diſtilling of burning ſpirits by wooden veſſels inſtead of copper, but alſo for ſuch diſtillation, and digeſtion that is performed in gourds, boltheads, and other inſtruments, of glaſſe, ſtone, copper, tin, &c. which are to be ſet in Balneo: alſo in the boyling of beer, methegline, wine, and other drinkes, which are to be performed by the help of wooden veſſels.*

THE

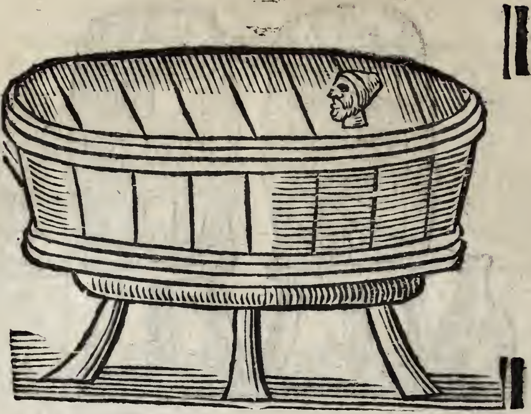


A. The furnace with a Copper globe. *B*. The Copper globe.
C. The diſtilling veſſel. *D*. The refrigeratory with a worme.
E. The receiver. *F*. Stooles on which the veſſels ſtand.

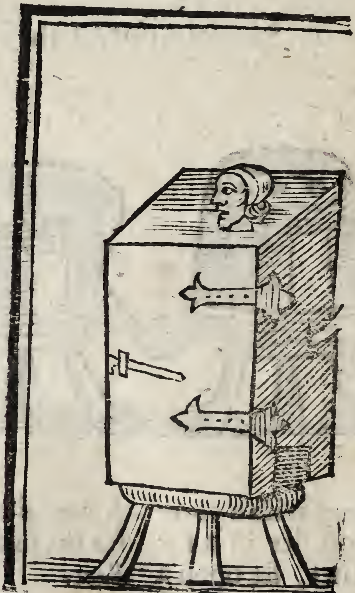


A *Balneum* with a cover having holes in it for the glaſſes, ſet upon a treefoot.

A wooden veſſel for the making of Beer.



A Tub for a moyſt Bath, which is to be warmed by the Copper Globe.



A wooden Box for a dry Bath to provoke ſweat with volatile ſpirits.

THE THIRD PART OF PHILOSOPHICAL FURNACES.

Of Wooden Inſtruments of that are to be uſed inſtead of Still's, Baths, and Cauldrons.

IN the firſt place I ſhall ſpeak of wooden veſſels that are to be uſed inſtead of Copper ſtils, in the diſtilling of burning ſpirits, out of wine, beer, lees, malt, wheat, meal, roots, hearbs, flowers, ſeeds, and other vegetables, as alſo oyles of vegetables.

See that thou haſt an oaken barrel, like to thoſe wherein wine and beere are kept, of a juſt bigneſs, *viz.* anſwerable to the bigneſs of the globe, as is ſufficient for the coction: For a barrel that is too big will make the coction ſlow, and tedious. A greater globe may be fitted to a leſſer barrel, but not on the contrary, a great barrel to a little globe: For by how much bigger the globe is and the leſs the barrel, ſo much the ſooner is the work haſtned. Now ſeeing that this Art was invented for the ſaving of coſts,which otherwiſe would have bin expended in providing of ſtils,cauldrons,furnaces,&c. it is beſt not to have too great a globe,which requires a greater furnace,and is more hardly to be carryed,becauſe it is to be covered within with lute, or a wall;for it is ſufficient if it be big enough for the coction. Wherefore I wil give you a juſt and due proportion of both,*viz.* of the globe, and veſſel,which in diſtillations and other operations, the curteous reader may imitate.

A globe of the bigneſs of a mans head, containing three or foure cannes, whereof each containing four pints, is ſufficient for the heating of a barrell of 30, 40, 50, 60 and 100 gallons, which by how much the more remote from 100 and neerer to 30, ſo much the ſooner is it heated, and the coction furthered; and on the contrary, by how much the neerer it is to 100 and more remote from 30, ſo much the ſlower is the coction. I do not therefore adviſe that a huge barrell be choſen for a ſmall globe, by reaſon of a long and tedious operation: And if all and every thing be not ſo accurately obſerved to a hair, yet it matters not much, becauſe it ſufficeth to do the ſame thing by the help of any ſmall copper inſtrument, which otherwiſe is done by divers copper inſtruments of divers forms. For in this way of diſtilling, wooden veſſels that are requiſite to the diſtilling of ſpirits, and boiling of Beer, and for baths are more eaſily provided, then ſo many copper veſſels in the common way. For by this means not only coſts are ſpared, but alſo it is in ſtead of building of furnaces; becauſe when any barrell hath been uſed, you may remove it, and ſet another in the place of it for another operation, the which cannot be done with ſtils and cauldrons faſtened into a furnace. And this invention is for thoſe that want Artificers, as Copperſmiths, &c. becauſe wooden inſtruments are more eaſily provided: alſo by the help of this globe may moſt ſecret operations be performed.

For the furnace with the copper globe may be built in one place, and in another place the *Balneum*, *viz.* places divided with a wall,ſo that he that looks to the fire may not know what is done in the Elaboratory; for oftentimes the care of the fire is committed to heedleſſe ſervants, that breake glaſſe inſtruments by their careleſſeneſs, by which means oftentimes a moſt precious medicine is loſt; which danger this invention is without.

Wherefore this copper globe with its wooden veſſels is more convenient then thoſe copper ſtils and cauldrons. But this I would have thee know that this new invented diſtillation is ſlower, then the common way which is performed by ſtills, and conſequently requires a long fire. I deſire therefore the rich that dwell in large and ſpacious houſes, that they would uſe the old way of diſtilling; but the poor, who have but little houſhold conveniences, and the covetous, that they would uſe this little copper globe with its wooden veſſels: for although there be a longer fire required, yet theſe are not to be compared to thoſe coſts which are otherwiſe expended upon ſo many copper veſſels of ſo many divers formes. Let him therefore keep to his copper veſſels, who cannot underſtand me, for it concernes not me. Without doubt there are ſome whom this my new invented way of diſtilling will pleaſe, before other, being communicated for the ſake of the poor labouring houſe-keepers, that cannot boil Beer, and diſtill burning ſpirits for lack of veſſels: for a globe of five or four pound is more eaſily provided, then other copper veſſels of 60, 80, 100 pound: alſo thoſe wooden veſſels are more eaſily provided then furnaces, which ſome for want of place only cannot build. Chooſe therefore which way thou wilt, for theſe things which I have wrote, I have wrote for the poores ſake rather then of the rich. Certainly rich men that have ſpacious Elaboratories need not be aſhamed to follow this way, for it is free for every man to goe a ſhorter way, unleſs they had rather prefer the old and true way before a new and compendious, whom I cannot help, being contented with a publication which is made for the ſake of my neighbour, whether it be taken well or ill, with a good minde, certainly knowing that more profit then diſprofit may be obtained by the help thereof. It ſhall not therefore repent him of his labour, who knows rightly to prepare and uſe copper and wooden veſſels.

There follows now the preparation of the veſſel.

THE veſſel being made is to be placed with one bottome, upon a ſtool that is fitted for it, which being done, make a hole with a wimble neer the bottome, for the receiving of the neck of the copper globe, which is to be covered over with a linnen cloth: make alſo about the lower bottome another hole for a tap, by the help whereof the remainder of the diſtillation is drawn forth: alſo you muſt make a large hole in the upper bottome, the diameter whereof muſt be one ſpan for to poure in the water to be diſtilled, with a funnell. Alſo there muſt be made a hole neer the upper bottome of two or three fingers breadth, into which is to be ſent a copper pipe of a ſpan long, which is to be faſtened cloſely therein; and to this pipe another oaken veſſell with a copper worm and cold water like to other refrigeratories, muſt be applyed. Alſo the joints of the aforeſaid ſhort pipe, *viz.* of the firſt barrell, and of the ſecond barrell, *viz.* the refrigeratory muſt be ſtraightly, and cloſely united together, which afterward may be the better joined together with a fit lute for the diſtilling. And this is the form and faſhion of the wooden veſſell, that is to be uſed in the place of copper veſſels, in the diſtilling of burning ſpirits and oiles. But thou wilt object that theſe kinde of wooden veſſels are porous, and drink up great part of the ſpirit and oyls.

I anſwer; none of the ſpirits ſeeketh a violent paſſage out, in caſe the wayes be open. There is no danger therefore, when there is paſſage enough given them by a pipe that is wide enough. Neither doth oil ſtick to them in diſtillation, for whatſoever is by force of the boiling water to be ſeparated from the ſpirit, and ſeeds that alſo is ſublimable by the force of the ſeething water, ſo as to diſtill in the refrigeratory no more is loſt then in the ſtils. Diſtillation being made, the aforeſaid ſpirits may be rectified in theſe wooden veſſels, (being firſt waſhed) as well as in the copper ſtils.

The

The making of a wooden veſſell for a Balneum, which is to be uſed in ſtead of copper and leaden Cauldrons for digeſtion, and diſtillation by glaſſe veſſels.

MAke an oaken veſſel as big or as little as you pleaſe, according to the greatneſſe, or littleneſſe, multitude, or formes of the veſſels, of two or three ſpans high, a little narrower above then below, and ſo faſhioned above, that a cover of wood, copper, or lead, may moſt cloſely be joined to it: the cover muſt have holes greater or leſſer, according to the glaſſes, as is wont to be in the making of a *Balneum*, as you may ſee by the annexed figure. This veſſel alſo muſt be placed upon a ſtool of the height of an el, or ſuch height as is required for the joining of the copper globe with the *Balneum*, which muſt have a hole neer the lower bottom, for the receiving of the neck of the aforeſaid globe. In defect of ſuch a veſſell, which yet you may provide eaſily enough, take a wine or beer veſſell divided in the middle and make a hole neer the bottome for the neck of the globe, make alſo a wooden cover with holes, &c. He that will be curious may provide all things according to the beſt Art.

A wooden veſſell ſerving for boiling of beere, metheglin, vinegar, &c. as well as copper Iron and tin veſſels.

MAke a wooden veſſel, which ſhall be more high then broad, a little under above then below, as you pleaſe; or take a wine or beer barrel divided in the middle, and neer; the bottome make a hole for the neck of the globe, which is to be covered with boards, which ſerves as wel for the boyling of beer, &c. as thoſe of copper.

A wooden veſſel for a bath for ſweet, or minerall water, which may be according as you pleaſe, kept warm, for the preſerving of health.

MAke a long wooden tub convenient to ſit in, which is to be ſet upon a ſtool of a juſt height, *viz.* that the bottome of the veſſel may anſwer the neck of the globe which is put into the furnace: you may alſo have a cover, that may cover the whole tub, which may be divided and united in that place where the head goes forth, as appeates by the annexed figure; or you may cover it with a cloth, laying it upon ſmall crooked ſticks faſtned in the tub, yet ſo that the head may have its liberty, eſpecially in a vaporous bath of common ſweet, or medicinall water; or make a high wooden coʌer ſhutting very cloſe, for a dry ſweat, where it is no matter whether the head be ſhut in or no.

Of the uſe of wooden veſſels in diſtilling, boyling, bathing, &c. And firſt of the diſtilling veſſel.

HE that will diſtill any burning ſpirit by help of the diſtilling veſſel, out of wine, metheglin, beer, barley, wheat, meal, apples, pears, cherries, figs, *&c.* alſo out of flowers, ſeeds, and other vegetables, hath need ſo to prepare his materials, that they may yeeld their ſpirit. Where I thought it convenient, and indeed neceſſary to ſay ſomething of the preparation of each vegetable, for better information ſake, or elſe a profitable diſtillation is not to be expected; but labour in vain to be feared.

And firſt of the preparation of the lees of wine, beer, hydromel, and other drinkes.

THe lees of wine, beer, hydromel, &c. have no need to be prepared, because they doe eaſily enough of themſelves yeeld their ſpirit, unleſs haply having loſt all their humidity they be dryed, which you may make moiſt again by the admixtion of common water, leſt they be burnt in diſtilling and ſtick to the veſſel; of which thing more in the diſtillation it ſelfe. Now flowers, roots, hearbs, ſeeds, fruites, apples, pears, cannot be diſtilled without a foregoing preparation. You muſt therefore firſt prepare them, as followeth.

Of the preparation of all kind of corn, as wheat, Oats, Barly, &c. which muſt goe before the diſtilling of the ſpirit.

AND firſt of all a malt muſt be made of the corn, as it is wont to be in the making of beer. Now the manner of making of malt is known almoſt to all, wherefore I need not ſpeak much of that, becauſe in all places that have no wine, there is ſcarſe any houſe found in which Malt and Beer is not made, as well in the country as cities. But however there is a great deal of difference of making of it, for a long knife doth not make a good Cook, nor all drinkers of wine are good planters. For many have perſwaded themſelves, that, if they follow the footſteps of their fathers, they have done well (although they have been in an errour) and being ſcornfull refuſe inſtruction. Wherefore ſomething is to be ſaid of the difference of malting. Although I never exerciſed the Art of making Beer, yet I am certain I doe in that excell all other diſtillers, and Brewers. For I often ſaw, and indeed with admiration, the ſimplicity of many in their operations, although common, and dayly, to whom though an age ſhould be granted, yet they would never bee more thrifty, being content with their ancient cuſtomes. Good God! How perverſe is the world, where no body labours to find out any good, neither is there any one that thinks of perfecting, and amending things already found out: Where all things run to ruine, and all manner of vice increaſe: for now almoſt every one ſeeks only after riches *by right or wrong*; for it is all one with them, if they have them, not thinking that things ill-gotten ſhall periſh, and that the third heir ſhall not injoy them, and that unjuſt riches ſhall devoure hoſe that have been honeſtly gotten, with danger alſo of eternall damnation. I pray you if our Anceſtors had been ſo negligent, and had left nothing to us, I pray you, I ſay, what Arts and Sciences ſhould wee have had now? It is come to this paſs now that vertues decreaſe, and vices increaſe.

Of the difference of malting.

THe difference of malt, by reaſon whereof it yeelds better or worſe beer, and ſpirit, conſiſts for the moſt part in the preparation thereof: for being made after the vulgar way it retaines its taſt, wherefore it cannot yeeld good ſpirit, nor good beer, which is obſerved of very few, wherefore they could not draw forth good ſpirit out of corn, but ſuch as ſavours of the taſt and ſmell of the malt. Which is not the ſalt of the corn, but of the artificer not operating aright in the preparation of his malt, in diſtilling and rectifying. For if it were prepared a right in all things, corn yeelds the beſt ſpirit, not unlike to that which is made out of the lees of wine, in taſt, odour, and other vertues. Which Art, although it be not known to all, yet it doth not follow that it is impoſſible: Now I did not ſay that it is that common way, whereby that ſpirit, which is like to the ſpirit of wine, is diſtilled, but another which is more ſubtill, and witty. Out of all vegetables is drawn a burning ſpirit, yet ſuch as is perceived by ſome difference of the taſt, and odour, but that is not the ſpirits fault, but of the vegetable, as of hearbs, ſeeds, corn, &c. communicating their vertues, taſt, and odour to the ſpirit: whence that ſpirit deſerves to be called not ſimple, but compounded; for elſe all the burning ſpirit (being rightly rectified from its flegm) is made out of any thing, having the ſame vertues with the ſpirit of wine, although it ſeem unprobable to ſome. I do not deny that one ſimple may yeeld more or leſs ſweet ſpirit then another. For ſweeter wines yeeld ſweeter ſpirits: Alſo cleere wine yeelds a ſweeter ſpirit then the lees of wine, although they come forth out of one and the ſame veſſel: For clarified wine, and that which is ſparated from the fæces yeelds a ſweeter ſpirit then the Lees, and impure & heterogeneal ſediment which corrupts the ſimple,and ſweet ſpirit, with a ſtrong taſt and ſmell: ſo that that may deſervedly being as it were ſimple, be preferred before this which is accidentally corrupted. And this is to be underſtood of all other ſpirits. What hath hitherto been ſaid, hath been ſpoken for the ſakes of them, who have perſwaded themſelves that they could not perform chymical operations ſo well by the ſpirit of corn, as with the ſpirit of wine, for I never found any difference of both in the extraction of minerals, as vegetables. Let him therefore that can receive my opinion, and experience, ſeeing I will have nothing to doe with contradicting Carpers: Without hurt to others I dare not reveal the Art of diſtilling ſweet ſpirit with great profit out of corn, in all things like to that which is made of the fæces of wine, *viz.* without preparation or grinding of malt, which ſhall haply be communicated elſewhere at ſome time or other. For this Book is not written for the publiſhing of ſecrets, but of a new invented diſtillation. But thou that wilt make a ſweet burning ſpirit out of malt or honey; know this,that the corn muſt be brought after a certaine peculiar manner into malt, and loſe its ungrateful ſavour before its diſtilling, and fermenting, or elſe after the wonted manner a certain ungratefull ſpirit will be drawn from thence, that cannot be compared to the ſpirit of wine. The whole Art therefore conſiſts in a true preparation; For ungrateful things are by Art brought into a gratefulneſs, and on the contrary grateful things are made ungrateful by negligence. And thus much for information ſake.

Of the fermentation of Malt.

TAke of malt ground in a mil as much as you pleaſe,upon which in a wooden veſſel ſet up right, pour cold water, as much as will moiſten it, and ſerve for mixtion and comminution; then alſo pour as much warm water as will ſuffice for the making the mixture moiſt, and thin, and alſo warm; for it muſt be neither hot nor cold; which being done mix with it ſome new barm, and cover it with a cloth, and in a ſhort ſpace being expoſed to heat, it will begin to ferment (wherefore the veſſel is not to be filled to the top) and leave it ſo long in fermentation, until the mixture deſcends, which for the moſt part is wont to be done the third day, and the malt will be ready for diſtillation.

Of the fermentation of Honey.

NEither hath honey any need of a ſingular Art in its fermentation, becauſe being mixed with 6, 7, 8, 10 parts of warm water, it is diſſolved, and unto the ſolution is added ferment, as hath been ſpoken concerning malt, which afterward is left covered in ſome heat for to be fermented, being fit for diſtillation when it becomes to wax hot. Now know that too great a quantity of honey makes a very ſlow fermentation, *viz.* of ſome weeks and months; wherefore for acceleration ſake, I adviſe that a greater quantity of water bee added; although otherwiſe it yeelds plenty of ſpirits, but ungrateful, which therefore I adviſe no body to diſtil as being unprofitable, unleſſe any one know how to take away the ungratefulneſs thereof.

Of the preparation of fruits, ſeeds, flowers, hearbs, roots, &c.

THe fruits of trees, as cherries, plums, apples, pears, figs, juniper-berries, elder-berries, dwarf-elder, and mulberries, &c. are bruiſed in wooden veſſels, with wooden peſtils; and upon them being bruiſed is poured warm water, and ferment added to quicken it, as hath been abovesaid of malt. Seeds are broken in a mill; flowers, hearbs, and roots, are cut ſmall, and are ſtirred up to fermentation by mixing of warm water and barm.

An Annotation.

BEfore thou diſtil the aforeſaid vegetables prepared by the help of fermentation, diligently weigh, and accurately obſerve whether the mixture be ſufficiently fermented, for ſometimes there is ſometimes too much cold, or hot water put to it; ſometimes the veſſel is not well covered, by which meanes the cold air is let in, whence the fermentation is hindered, and conſequently the diſtillation of the ſpirit: For by the help of fermentation the burning ſpirit of the vegetables is ſet at liberty, without which it cannot be done; alſo the diſtillation is hindred by too much haſt, as wel as by too much delay: for if thou begin to diſtil before the time, *viz.* fermentation not being yet perfected, thou ſhalt have but few ſpirits; wherefore alſo the better part is by many that are unskilful caſt to the ſwine, but without any great loſs, if the matter were malt, becauſe that ſwine are fed therewith: But not ſo if other vegetables were the matter of the diſtillation. Alſo too much ſlowneſs where the matter begins to be ſowre before it be diſtilled, yeelds very few ſpirits, that which often happens, whileſt hearbs, and flowers, &c. are out of ignorance left in fermentation 3, 4, 5, and more weeks, before they be diſtilled, for the greateſt part of the ſpirit is then turned to vinegar, which would not be ſo very ill done, if ſo be theſe men knew how to clarifie the remainders, and torn it into vinegar, that nothing thereof be loſt; for the vinegars of hearbs, flowers, ſeeds, and roots are not to be contemned. And ſo often times (a thing to be lamented) the better part, if they be ſpices, and pretious things, is loſt.

The matter of the diſtillation, and other choice things, as ſeeds, and hearbs are caſt away with loſs: wherefore for admonition ſake I was willing to adde ſuch things that the operators may have an opportunity to conſider the matter a little more profoundly with themſelves, or at leaſt of learning the art of diſtilling from countrymen, who do not ſuffer their malt to putrefie, grow ſowre or mouldy, before they fall upon their diſtillations, but preſently fermentation being made (the third or the fourth day) begin their diſtillation.

But ſome one will object, that my vegetable ſpirits are not pure by reaſon of the ferment that is mixed, having in it ſelf a ſpirit. I anſwer, there is not ſo great a portion of the ferment mixed which can corrupt the vegetable ſpirit. For although ſome ſpoonfuls of ferment yeelding but a few drops of ſpirit be added to a great quantity of the vegetables; yet there can come no hurt or detriment to ſo many quarts of the vegetable ſpirit. I have ſeen ſome ſupercilious men that would not adde ferment to the matter of their ſpirit, but ſugar or honey, by which they would promote fermentation, and ſo have thought to get a pure ſpirit not conſidering that honey, and ſugar after fermentation are made to yeeld their ſpirits alſo, whereof one ſpoonful yeelds more then ten or twenty of Barm: But honey and ſugar fermenting not without difficulty themſelves, how can they promote the fermentation of other things? Who alſo have had experience, that the addition of their ferment hath been ſuperfluous, whileſt their flowers and hearbs have ſtood ſome weeks in maceration, before they begun to ferment, and that oftentimes they have contracted an acidity, muſtineſs and ſtink, the reaſon of which was an unſutable ferment. There are indeed the fruits of ſome trees that have a ſweet and ful juice, as grapes, cherries, apples, pears, figs, &c. which need not the addition of any ferment, having a natural ferment of their own, but other vegetables not ſo, being lean, as hearbs, flowers & roots. It is neceſſary there to promote the fermentation of them by the addition of a ſutable ferment, leſt in length of time theſe hearbs and ſeeds loſe their ſpirit exhaling in maceration. And thus much I was willing to ſay for information ſake, and indeed for the ſake of them who ſeek after the beſt, and choiceſt medicines, wanting a good burning ſpirit as a companion applicable to them. For this ſpirit came not only by it ſelf, as *Aqua vitæ* into a medicinall uſe as well internal as external, eſpecially that which is prepared of cordial, and cephalick hearbs; but alſo being united with the proper oyls of thoſe hearbs in many deſperate diſeaſes, where it could put forth its vertues eminently.

And thus much ſufficeth concerning the preparation of vegetables that goes before the diſtillation of burning ſpirits.

The manner of diſtilling ingenerall followeth.

HE that is going to diſtil hath need to ſtir his fermented matter very well with a ſtick, that the thicker parts may be well mixed with the thinner, and then he muſt fill therewith his diſtilling veſſel ſet upon a treefoot, and joined to the copper globe in the furnace on one ſide, and to the refrigeratory on the other, the joints in all places being well cloſed either with Oxe bladders, or with ſtarch and paper. Alſo the interiour part of the globe in the diſtilling veſſel muſt be fenced with a copper or wooden basket, that the hearbs, ſeeds, and other things enter not into the globe, into which only water muſt come. Alſo the upper hole muſt be cloſe ſtopped with a fitting ſtopple wrapt about with linnen clouts, (*viz.* that hole by which the matter to be diſtilled is put in) like to veſſels of wine that are ſtopped. Which being well done, you muſt kindle the fire in the furnace under the globe; until all the matter in the whole veſſel boil wel, and that burning ſpirit riſe, and go out, though the refrigeratory (where it is condenſed) into the glaſs receiver that is ſet under it, no leſs then diſtilled out of a ſtil; and you muſt continue the fire til all the ſpirit be come forth, which you may know by the taſt. Which being done and all things being cold let the remainders be taken out by the lower large tap hole, for meat for ſwine, or other uſes. The ſpirit that is drawn off may be exalted, and rectified at your pleaſure in the ſame veſſel, being firſt made clean together with the refrigeratory. Note wel, that ſometimes there is left a fat oil with the flegm in rectifying of the ſpirit, proceeding from that hearb of which that was the ſpirit, which did diſtil off with the ſpirit from the matter with a ſtrong fire in the firſt diſtillation, but in the rectifying could not aſcend with the ſpirit in a gentle fire, but is conſtrained to remain with the inſipid flegm. And this oyl alſo hath its vertues, eſpecially that which is rectified by a glaſs gourd in Balneo, with ſpirit of ſalt, and clarified. Now the like oyl is got almoſt from all hearbs, roots, ſeeds, flowers, and fruits, but out of one ſubject more then another, according to the hot and cold temper thereof. Eſpecially the ſediment of wines yeelds a good quantity of ſuch oyl, which is as medicinable as the true oyl of wine, being rectified not before it be endued with a ſweet ſavour, and it is an excellent cordiall, although I knew no body that knew this before.

And thus I have ſhewed the generall way of diſtilling, burning ſpirits, by help of the aforeſaid wooden diſtillatory. Now alſo follows,

The manner of diſtilling ſpices, ſeeds, flowers, hearbs, roots, Woods, &c.

First, the ſeeds muſt be broken in a mill, flowers, hearbs, and roots cut ſmal, the woods broken are filed, upon which afterwards a good quantity of water (in which they may ſwim) muſt be powred for the maceration of them, ſo that when the diſtillation is ended there may remain ſome water, leſt for want of water they be burnt in the diſtilling, and yeeld an oyl ſavouring of the *empyreuma*, and not ſweet. Neither is too great a quantity to be powred on them, but as much as ſhall ſerve to prevent the burning of the aforeſaid vegetables in the diſtilling of the oyl thereof. And indeed freſh vegetables may preſently without any foregoing maceration, being put with their proper waters into the diſtilling veſſel be diſtilled. But they that be dry may for the ſpace of ſome dayes be macerated before they be diſtilled. Alſo the water appointed for maceration muſt be ſalted, for the better mollifying, and opening the aforeſaid materials, that they may the ſooner yeeld their oyl. Now green and freſh need not any ſalt water, yet it wil not be hurtful to mix ſome therewith, becauſe ſalt helps the boiling water, ſo as to make the oyl more eaſily to aſcend. It alſo helps and furthers diſtillation as doth Tartar and Allome, if they be rightly mixed and ordered. Which being all rightly done, the materials that are macerated muſt be put by a funnel into the diſtilling veſſel, and fire muſt be given as hath been ſpoken concerning the burning ſpirit, and the oyle of the ſeed, or wood macerated in the water will come forth in the coition together with the water. And although by this way more oyle comes forth, *viz.* Maceration being made by the addition of ſalt, then without ſalt, by the help of the ſweet water alone, as is the faſhion in all places almoſt to diſtil oyls of ſpices; yet much remaines inſeparable by the water, and conſequently not to be ſublimed with the water. Therefore the better way is that which I ſhewed in the firſt part to be performed with the ſpirit of ſalt, which if you pleaſe you may follow. All the oyle being come forth (that which is perceived by the changing of the receivers) the fire is to be extinguiſhed, and the remainder is to be taken out, which if it be of ſeeds, hearbs, or fruits, may being yet warm be fermented by the addition of ferment for the diſtilling of the ſpirit, of which there cannot be ſo great a quantity by reaſon of taking away of the oyle, as otherwiſe is drawn out of things that have not loſt their oyle: For all burning ſpirit partakes of much oyl, of the eſſence, and nature whereof more a little after. Now the oyls muſt be made without the addition of any ſalt, for ſalt hinders the fermentation, without which the burning ſpirit cannot be had. But the water that is diſtilled together with the oyle, is to be ſet in a certain temperate place, until the oyle aſcend, and ſwim upon the water, from whence it is to be ſeparated with a Tunnel (of which in the fifth part,) alſo there are ſome oyles which doe not aſcend, but fall to the bottome, which are are alſo to be ſeparated with a Tunnel, and kept for their uſes. Now how theſe oyles may be kept clear long, and not contract any clammineſs, ſhall be taught in the 5 part: but how they ſhall after they have loſt their clearneſs by long ſtanding, and are become tenacious, be reſtored and clarified again, is taught in the firſt part, wherefore I need not here repeat it.

How Oyles are to be coagulated into Balſames.

IT hath been the cuſtome a long time to turn aromaticall oyles into Balſames, where alwayes one hath been willing to excell another in this Art, which nevertheleſs was nothing hitherto, but for a waſhing and cleanſing; for they could not be uſed inwardly, but only outwardly for their odour to comfort the heart and brain. Now the aforeſaid oyls are coagulated many ways and are made portable in Tin, Silver, and ivory boxes.

Some have mixed the fat of a lamb with them by help of heat and have turned them into a liniment, which they have colored with divers colours; as for example, they have corrupted the oyles of green hearbs; as roſemary, majoram, lavender, rue, ſage, with a green colour, by the admixtion of verdigreaſe (which is noxious to the head and heart) where one corroborates and refreſheth, another deſtroyes. They have tinged the Balſame of Cinnamon, and *lignum Rhodium* with a red colour by the help of a poyſonous Cinnabar. Others that are more induſtrious have tinged their Oyles with extracted colours of vegetables, which balſames are more ſafely taken inward: But they are not durable, acquiring a ſlimineſs and ſtink; wherefore they have mixed a white wax to coagulate them: By which means they are become more durable without ſtinking; but yet in length of time ſo tenacious, that being ſmeared or rubbed upon the skin, they ſtick faſt by reaſon of the wax that is mixed with them: at laſt others have found out a better way of coagulating aromatical oyles, and other things, *viz.* by the addition of the oyle of Nutmeg made by expreſſion, having loſt its odour and colour by ſpirit of wine; which they called the *Mother of Balſames*. And this way hath been a long time concealed by Apothecaries as a great ſecret, until at length it be made of publick right) ſo that balſames prepared after this manner are ſold almoſt in all ſhops: But however that be the beſt way, yet they are not durable balſames that are made that way, becauſe they lack ſalt. I doe not contemne and diſapprove of Balſames made after this way, for if a better way were knowne, ~~better had been made;~~ for no man is forced beyond his power. Wherefore they are not onely to bee excuſed that have uſed Lambes fat, Waxe, and the oyle of Nutmegs in the making of their Balſames, but alſo to be honored for their communication. Now ſeeing the aforeſaid Balſames cannot bee taken inward, nor bee ſo well outwardly adminiſtred by reaſon of their unctuoſity, others have conſulted to congelate the Oyles by the admixtion of their owne proper fix-ſalts: and Balſames prepared after this manner are made free from clammineſſe, or tenaciouſneſſe, and may be diſſolved in wine, beer, or any liquor.

Wherefore they may be not onely conveniently taken inward, but alſo more conveniently then thoſe old be rubbed outwardly for the odours ſake, becauſe they are eaſily waſhed off againe with water. They doe not onely give a moſt ſweet odour being rubbed, but alſo by reaſon of the admixtion of a fixed ſalt, having the nature of ſalt of Tartar, doe beautifie the skin. Wherefore they are commended, being diſſolved in fair warme water for a waſhing for the head, and face; not onely becauſe they beautifie, but corroborate with their excelcellent odour: that which thoſe fat Balſames cannot doe. Wherefore this way is to be preferred farre before the other.

Let him therefore that will, receive what I have ſaid, for *rare things and new things are not alwayes accepted*, eſpecially *being obſcure*: but I hope for the approbation of the age to come.

The manner of preparing follows.

TAke the remains of the burning ſpirit, and being put into a ſack, preſs it hard : reduce the water preſſed out into vinegar, and of roſes thou ſhalt have a roſe vinegar, and of other things another, being the beſt in a family for to ſeaſon meats : then take the remains out of the ſack, and reduce it to white aſhes in a potters furnace, upon which pour the flegme of its own burning ſpirit (being ſeparated) to extract the ſalt, from which evaporate again all the humidity in a glazed earthen pot : calcine the coagulated ſalt gently in a clean crucible, and it will be white and be like to ſalt of Tartar in taſt; from which abſtract ſometimes its owne proper burning ſpirit, calcining the ſalt firſt every time; and the ſpirit will be ſo exalted by its proper ſalt, ſo that it will preſently aſſume its proper oyle, and will being powred upon it aſſociate it to it ſelf ſo as to be perceived no more in the ſpirit which will remaine very clear : Which being done calcine the ſalt yet once more very well in a crucible, and diſſolve ſo much of it in its proper flegme, as ſufficeth for the coagulation of the oyle, then mix this ſolution with the burning ſpirit; mixed with its oyle, and ſet it in a vial of a long neck well ſtopt, in a Balneo, that the ſpirit may not exhale, for the coction of it, and in the ſpace of a few hours there will be an union of the mixture which will be as white as milke. Which being done, let the glaſs coole, for there is a conjunction of the ſpirit, oyle, and ſalt, ſo that neither can be diſcerned from another, which is to be powred into a veſſel of a wide mouth, and it will be congealed in the cold like a white oyntment, not only to be annoynted with all, but alſo to be diſſolved in any liquor, being of an excellent odour, which may alſo be given inwardly very conveniently, and being uſed outwardly it makes the skin beautiful and ſweet; wherefore this is that moſt deſired balſame of Princes and Ladies. And by this way the three principles of vegetables, being ſeparated, and purified, are againe remitted, in which union there is of that whole vegetable, found the whole vertue, taſt, and odour.

Note well, That he that will colour balſames, muſt draw the colour out of vegetables with ſpirit of wine, which he muſt make to be coagulated together with it. After this aforeſaid manner, therefore you may draw out of any vegetable that hath in it ſalt, ſpirit, and oyle, ſoluble and well ſmelling balſames without the addition of any other ſtrong thing, which are not to be contemned.

And becauſe here alſo is taught that moſt odoriferous balſame of roſes, for roſes yeild but a little oyle, without which that cannot be done, know that not only roſes or roſe leaves alſo are to be taken for the making the aforeſaid balſame, but alſo together with the leaves thoſe whole knots; for that yellow that is in them yeilds that oyle, not the roſe leaves, *&c.* And let what hath been ſaid ſuffice concerning our preparation of balſames, which if they be rightly made are not I ſuppoſe, to be contemned, neither do I *reject* thoſe that are made without ſalt: Let him that hath bettet communicate them, and not carp at ours. And ſo I would that all and each proceſs ſhould be comprehended under ſome one general, *viz.* of diſtilling burning ſpirits, and oyles, by the help of a wooden diſtilling veſſel, and their conjunction by the help of their proper fixed ſalt, I could here add more things concerning the uſe, and vertues of ſpirits of wine, and of thoſe moſt ſweet vegetable oyles; but becauſe they are cleerly enough ſpoken of by others, I account it a ſuperfluous thing to repeat the ſayings of others, being contented with the deſcription of one onely general proceſs, which you may imitate in other particulars.

There

There followes now the uſe of the ſecond wooden veſſel, which is to be uſed in ſtead of thoſe of copper or lead, ſerving for diſtillations, digeſtions, extractions, and fixatious.

THe veſſel being made ready according to the preſcription ſet down before, there is nothing elſe to do, then to fit the furnace with the globe, and at your pleaſure to heat water in it, with a government of the fire in the furnace. Now all things may here be done, which otherwiſe are done in a common *Balneo*; where there is no other difference but of veſſels; here is uſed a wooden veſſel, there a copper, leaden, or iron, &c. In this operation alſo is uſed the ſame furnace with the ſame globe, which was uſed above in the diſtillation, whrefore you need add nothing elſe beſide, for nothing is more common then a *Balneum* in diſtillation; let the demonſtration therefore of the uſe of a copper globe ſuffice. Now I thought it worth while to ſet down ſome Chymical medicinal extracts, not common, which may be made by the help of this *Balneum*, which being rightly prepared do many things in many diſeaſes.

And firſt of a vomitive Extract.

TAke an once of the flowers of Antimony, of purified Tartar ℥ij. of ſugar-candy ℥vj. of raine water two pints, being mixed together ſet them in a ſtrong vial in *Balneo* for to be cocted, and make them to boyle ſtrongly the ſpace of ten or twelve hours. Then the *Balneum* being cold, take out the glaſs, and powr forth the decoction, and filter it through a brown paper put into a tunnel; the filtred water will be reddiſh betwixt ſweet and ſowre, which take (the fæces in the filtre being caſt away) and in a ſmal gourd glaſs draw off all the moyſture with a gentle fire in *Balneo* unto the conſiſtency of honey of a browniſh colour, upon which again powre a pint of ſpirit of wine, powred forth into a vial of a long neck; and ſet it in *Balneo* with a moderate heat the ſpace of eight or ſixteen hours, and then the ſpirit of wine will ſeparate, and extract the eſſence, which will be more pure and noble, the fæces being left in the bottome; which after all things are cold are to be ſeparated by the help of filtration through a double brown paper. Then take the red tincture that is filtred, and in a gourd glaſs in a gentle Balneo draw off almoſt all the ſpirit of wine until there remaine a mattet like a very ſweet ſyrup, which being taken out keep as a moſt excellent vomitive, moſt profitable in many diſeaſes, where other Catharticks can do nothing. For this medicine works moſt gently, wherefore it may be given to rchildren of a yeer and half old without danger, and alſo to old men. This medicine purgeth all humors and attracts all humours from the nerves, and veins, opens all obſtructions of the liver, ſpleen, lungs, and kidneys, by which means many moſt grievous diſeaſes are cured.

I never found a vomitive comparable to this, which works quickly and ſafely. The doſe of it is from grain 1.2.3.4. to 10, and 30 according to the age and ſickneſs. It may be taken by it ſelf, or in wine, beer, *&c.* and it will within a quarter of an houre begin to work, and ceaſeth within two hours. Sometimes it doth not provoke vomit at all, but only ſtools, where a glyſter is very helpful if it be given a little before the adminiſtring of the aforeſaid medicine, being made of two or three ſpoonful of oyle Olive, and ſalt water; for the glyſter prepares the way below, ſo that it ſeldome then works by way of vomit: when alſo the patient may preſently after the taking of the medicine hold hot toſted bread to his mouth, and noſe, which hinders vomiting and promotes the operation by ſtool. But in my judgement it is better not to hinder the medicine ſeeking a ſpontaneous way of operation, and not forced: For vomiting is more convenient for ſome, then purging by ſtoole. Now theſe things I have ſpoken for the ſake of thoſe, who although they abhor vomiting, yet deſire to be purged by the eſſence of Antimony, which is of all that I know the moſt ſafe, and ſweet Cathartick. For it ſearcheth the whole body far better then all others, and frees it from many occult diſeaſes, that which all other vegetable Catharticks could not do. It hath alſo this commodity in it, that although by littleneſs of the doſe, or the ſtrong nature of the patient it doth not work by vomit, or ſtool, yet it doth not like other medicines hurt the body, but works either by ſweat, or urine, ſo that Antimony being rightly prepared is ſeldome adminſtred without profit. When as on the contrary vegetable Catharticks being given in leſs doſe or by reaſon of ſome other cauſes do not work, although they do not make the body ſwel, and produce manifeſt diſeaſes, yet they may threaten to the body occult ſickneſſes.

Now the *Arcanum* of Antimony doth not only not do hurt, if it do not ſenſibly operate, but by inſenſible working doth much good to the body of man. Wherefore there is a great difference betwixt purging minerals, and vegetables. For minerals are given in a leſs doſe without nauſeouſneſs, but vegetables with a great deal of nauſeouſneſs, and ſometimes with danger to the ſick in a greater doſe. Now that nauſeouſneſs alſo proceeding oftentimes from the great doſe of the ungrateful bitter potions does more hurt then the potion it ſelf. I wiſh that ſuch kinde of groſs medicines were aboliſhed, and the ſweet extracts of vegetables and eſſences of minerals were ſubſtituted in their place.

A purging Extract.

TAke of the roots of black Hellebor gathered in a fit time, and dryed in the aire one pound, the roots of Mechocan, Jallap, of each four ounce; Cinnamon, Anniſſeed, and Fennelſeed, of each one ounce; of Engliſh Saffron a dram, powder all theſe ingredients, then powre upon them the beſt rectified Spirit of wine, in a high glaſs gourd, and upon this put a blind Alembick, and ſet it in digeſtion in Balneo, until the Spirit of wine be tinged red, which then decant off, and powre on freſh, and ſet it againe in digeſtion; untill the ſpirit be red, which alſo decant off: then powre on freſh again, and do this ſo often until the ſpirit will no more be tinged red, which commonly is done at three times. Mix theſe tinged ſpirits, filter them, and in Balneo by a glaſs Alembick with a gentle heat draw them off from the Tincture, and a thick juyce will remaine at the bottome of a brouniſh colour, which you muſt take out whileſt it is yet hot, and keep it in a clean glaſs for its uſes. The Spirit of wine drawn off from the extract may be reſerved for the aforeſaid ſame uſe. Now this extract is given from grains 3. 6. 9. 12. to ʒ1. according to the age, and perſon, beeng mixed with Sugar, it hath not an ungrateful taſt, and it works gently, and ſafely if it be not given in too great a doſe. And if thou wilt have it in the form of a pill, mix with it being yet hot an ounce of cleer Aloes, and half an ounce of Diagridium powdered, being mixed bring it into a maſs for pils, and keep it for your uſe. The doſe is from grains 1. to a ſcruple. It evacuates all ſuperfluous humors, but it is not to be compared with the medicine of Antimony And this extract I put down for the ſakes of thoſe that fear minerals, and abhor vomits, which in my judgment is the beſt of all vegetable Cathartickes.

A Diaphoretical Extract.

TAke the Wood Saſſafras, Saſſaparilla, of each ſix ounces; Ginger, Galangal, Zedoary, of each three ounces; long Pepper, Cardamoms, Cububs, of each an ounce; Cinnamon, Mace, of each half an ounce; Engliſh Saffron, Nntmeg, Cloves, of each a dram: Let the woods be raſped, the roots and ſpices powdered, powr upon them being mixed the ſpirit of wine, and let the tincture be drawn forth in Balneo, as hath been above ſaid of the purging Extract, evaporate away the ſpirit to the conſiſtency of honey; which keep for your uſe. It is good in the plague, feavers, ſcorbute, leproſie, frenchpox and other diſeaſes proceeding from the impurity of the blood, curing them by ſweat. The doſe of this Extract is from a ſcruple to a dram with proper vehicles: it provoketh ſweat preſently, driveth away all venenoſities from from the heart, and mundifies the blood.

And although it be a moſt effectual vegetable Diaphoretick, yet it may not be compared to thoſe ſubtile ſpirits of minerals, of which in the ſecond part. Alſo animal diaphoreticks have their commendations, as the fleſh of vipers, the fixed ſalt of ſpiders, and toads, in their peculiar operations, where each alone without the mixture of any other thing puts forth and ſheweth its operations; neither are animal, and vegetable diaphoreticks to be compared to the mineral, as *bezoarticum minerale*, *antimonium diaphoreticum*, and *aurum diaphoreticum*.

A Diuretical Extract.

TAke the ſeeds of Saxifrage, Caryoway, Fennel, Parſly, Netles, of each 3. ounces, the root of liquoriſh, the greater bur, of each an ounce, the powder of woodlice half an ounce. Let theſe being mixed and powdered be extracted with ſpirit of Juniper according to art: then mix theſe following things with the extracted matter: Take the ſalt of Ambar, ſoot, netles, of each half a dram, purified nitre a dram: Let theſe be powdered, and mixed with the extract, and this mixture be kept for uſe. The doſe is from a ſcruple to a dram, in the water of parſly fennel, *&c.* This extract forceth urin, opens the ureters, purgeth the reines, and bladder from all viſcous flegme (the mother of all tartareous coagulation) *viz.* if it be uſed timely: In this caſe is commended alſo the ſolution of flints, and cryſtals made with ſpirit of ſalt. A greater commendation have ſalts of nephretick hearbs made by expreſſion, and cryſtalliſation, without calcination, the preparation whereof ſhall not here, but elſewhere be taught.

A Somniferous Extract.

TAke of *Thebaic opium* four ounces, of Spirit of Salt two ounces, purified Tartar one ounce, ſet them being mixed in maceration in Balneo in a glaſs veſſel for a day and night, and the ſpirit of ſalt with Tartar will open the body of the *opium*, and prepare it for extraction, upon which powre half a pint of the beſt ſpirit of wine, ſet it in a gentle Balneo to be extracted,

extracted. Decant off the ſpirit that is tinged, and powre on freſh, ſet it in digeſtion till the ſpirit be coloured. Then mix the extractions together, and put to them in a glaſs gourd two drams of the beſt Saffron, of oyle of Cloves a dram, and draw off the ſpirit of wine in Balneo, and there will remaine a thick black juyce, which is to be taken out, and kept in a clean glaſs veſſel. The doſe thereof is from grain one, to five or ſix, for thoſe of a mans age, but to children the ſixth or eighth part of a graine. It may be uſed in all hot diſtempers without danger. It provoketh quiet ſleep, mitigates pains as well outward, as inward, it cauſeth ſweat; but eſpecially it is a ſure remedy for the epilepſie in children that are new born; for aſſoon as it is given to them to the quantity of the eighth part of a graine in wine, or womans milk, there preſently follows reſt, and ſweat with ſleep, by which means the malignity is expelled, the children are refreſhed, and deſire victuals, and the fit returns no more afterward. Although haply the like ſymptomes may be perceived againe, yet if the aforeſaid doſe be adminiſtred againe, the children are refreſhed, and cured wholly, whereas otherwiſe they would have dyed, *&c.* whereof I have not reſtored few with this medicine. Moreover alſo there are very effectual anodyne medicines, as thoſe volatile ſpirits of vitriol, allome, antimony, and other minerals, with which, as alſo with that narcoticke ſulphur precipitated from the volatile ſpirit of vitriol, nothing may be compared.

A Cordial Extract.

TAke of red roſes four ounces, of the lilie of the valley two ounces, the flowers of borage, roſemary, ſage, of each an ounce; cinnamon, lignum aloes, of each two drams; cloves, mace, nutmeg, galangal, cardamoms the leſſer, of each half an ounce; the ſhaving of ivory, hartſhorn, of each an ounce; of Engliſh ſaffron a dram, of *nux vomica* a dram: Mixe them and reduce them to a fine powder, and let the tincture be extracted with ſpirit of wine in Balneo, which is to be drawn off again, unto a juſt conſiſtency. Let the extract be kept for uſe. It may be uſed in almoſt all faintings, and other affects that are not joyned with a preternatural heat. The doſe thereof is from grains 3. 6. 9. to a ſcruple with proper vehicles; being often adminiſtred it refreſheth the ſpirits, corroborates the braine, and other parts of the body. It is made more efficacious by the adding of the eſſences of minerals, eſpecially of gold, of which thing ſee the firſt part concerning the ſweet oyle of gold.

Of an odoriferous Extract.

I Need not teach the making of any odoriferous vegetable extract, becauſe the manner of drawing forth, or diſtilling oyles of vegetables that have ſweet odours, hath been ſhewed a little before, as of hearbs, flowers, and ſeeds, which are the moſt noble, and ſweet eſſences of vegetables, by the odour whereof the heart, and braine are corroborated, which being reduced into balſams are made tranſportable. Better extracts therefore, and more excellent cannot in my judgement be made out of vegetables, then thoſe aforeſaid oyles, unleſs any one would mixe aromatical extracts made with ſpirit of wine with metallick ſolutions, and being mixed digeſt them, then there will a certain moſt odoriferous oyl go from the extract not only more efficacious, but more excellent then that common diſtilled oyl by reaſon of the admixtion of the ſpiritual metallick vertue, eſpecially of gold and ſilver, diſſolved in the acid *Menſtruum* communicating its vertues to the Aromatical oyle. Moreover any vegetable oyle may be exalted in vertues and odour by the help of ſpirit of urine, or ſalt Armoniack, by the help whereof not only odoriferous oyles are exalted, but alſo the inodorous oyles of vegetables are made odoriferous, if they be a while digeſted in ſpirit of urine: and not this only, but every mineral, and metallick ſulphur, although the odour thereof be bound up with moſt ſtrong bonds, is opened by the benefit thereof, and is reduced by digeſtion in a very little time into a moſt ſweet and odoriferous eſſence. Lixivial ſpirits exalt the odours, and colours of ſulphurs; acid purge ſulphurs, but change their colours, and odours. Muske and Civet get the ſweetneſs, and excellency of their odour from the ſubtile urinous ſpirit of a certain Cat, digeſting ſome certain fat and converting it into ſuch a kinde of moſt odoriferous matter.

And let this that hath been ſaid ſuffice concerning Extracts, which might have been omitted, becauſe many of theſe kinde of Extracts are found in the writings of other authors in many languages: but I was willing to ſet down theſe, leſt this book might ſeem to contain in it nothing elſe beſides the new way of diſtilling, being furniſhed alſo with good medicines.

Of Baths.

A Little before hath been given a deſcription of a Tub for a Bath in which any one may ſit with his whole body except his head, not only to be waſhed in ſweet warm water, whether medicinal and mineral, but alſo to ſweat in without water, where the veſſel is heated by warm vapours, either of ſweet waters, or minerals. And every one may provide ſuch Baths for himſelf according to his neceſſity at home, whereby the ſame diſeaſes are cured as thoſe that are cured by the help of natural Bathes, ſo that he need not for the Baths ſake go a great journey, but may ſtay at home with his family and follow his calling without trouble, when he hath occaſion and need to uſe them.

And whereas it cannot be denyed, that by the uſe of the Baths moſt grievous diſeaſes which cannot be cured by Phyſitians, are happily cured; I was willing for the ſake of my neighbour to publiſh this inſtrument together with the preparation of mineral waters; which publiſhing will not without doubt be without profit, and advantage. Wherefore I will in brief ſhew you the preparation of mineral, and ſweet waters, and their uſe, and firſt,

Of a Bath of ſweet or common water.

THere is no art to make a Bath of ſweet water, for you have nothing elſe to do, then to fill your veſſel with river or raine water, and to make a fire, which by the help of the copper globe will heat the water, which being ſufficiently heated, you may ſit in it, and cover the Tub, that the hot vapors evaporate not, nor the cold aire enter in, and coole the exteriour parts of the body: Wherefore alſo you muſt apply a clean linnen cloth about your neck, leſt the warme vapors may evaporate there: which being rightly obſerved, you may ſit the ſpace of 1. 2. 3. hours, or as long as you pleaſe or your ſickneſs require. You muſt keep a continual heat as much as is neceſſary, which may be done by the help of that globe. If you be thirſty in the mean time you may drink ſome proper diſtilled drink according to the nature of your diſeaſe, of which thing nothing now, becauſe I am reſolved to write a peculiar *book de Balneis*, and here only to ſhew the uſe of that copper globe in heating of Baths. And although there be not a perfect inſtruction of all, yet of ſome Baths, and their uſes there ſhall a ſhort inſtruction be given in this place.

Of the nature, and property of natural Baths.

KNow that the greateſt parts of medicinal waters in Germany, and other countries as well hot as cold carry with them from the earth a certaine ſulphureous acidity more or leſs: in which acidity conſiſts that medicinal faculty and vertue of this or that water. And if thoſe waters loſe their odour and taſt by the exhalng of their ſubtile ſpirits, then alſo they looſe their vertues; although alſo there be found ſome waters, which have not only a ſpiritual ſulphur, but alſo are impregnated with a certain mineral, or metallick body mixed with Allome, or Vitriol, which comes not elſewhere then from the common water running through the mines. There are found alſo other baths, the power and vertue whereof conſiſts not in any ſpiritual ſulphur, nor in any metallick body mixed with ſalt, but only in a certaine ſpiritual ſalt mixed with a certaine ſubtile fixed earth, which waters do not run through metallick mines as others do, but rather ſtones of the mountaines calcined with a ſubterraneal fire, whence alſo they borrow their ſubtile acidity with their inſipid earth. And this no man will deny that hath the knowledge of volatile and fixed ſalts of minerals, and metals: that which I am able to demonſtrate with very many, and moſt evident reaſons, if time and occaſion would permit; but it ſhall be done ſometime or other as hath been ſaid in a peculiar treatiſe. Now therefore I will only teach how by ſalts, minerals, and metals artificial Bathes may be made, which are not only not inferiour to the natural in vertue, but alſo oftentimes far better, and that without much coſt or labour, which any one may uſe at home in ſtead of natural for the expelling of diſeaſes, and recovering of health. And although I am reſolved to ſet forth a book that ſhall treat largly of the nature, and original of Bathes, and of their uſe; yet I am willing now alſo to ſay ſomething in brief concerning it, and that from the foundation, ſeeing that there are ſo many different opinions of learned men, and thoſe for the moſt part uncertain.

As concerning therefore the original of the acidity as well volatile, as corporeal, as alſo the heart of Baths, though that is not one, and the ſame; for elſe each would have the ſame properties, but daily experience teſtifies the contrary: For it is manifeſt that ſome Bathes help ſome diſeaſes, and others are hurtful for them, which comes from nothing elſe but from the difference of the properties of the mineral waters proceeding from a diverſity of mines impregnating thoſe waters. In a word, ſweet waters attract their powers, and vertues in the caverns of mountaines from ſome metal and minerals of divers kinds, that have naturally a moſt acid ſpirit of ſalt, as are divers kinde of marcaſites containing copper and iron, and ſometimes gold and ſilver; alſo kinds of vitriol and allome called by the ancients *Miſii, Rarii, Chalcitis,* *Melanteria*, and *Pyritis*, whereof ſome are found white like metals, but others diſperſed in a fat earth, of a round figure in greater or leſſer pieces : which ſulphureous ſalt mines whileſt the water runs through, and humectates, that ſpirit of ſalt is ſtirred up, having got a *vehiculum*, and fals upon the mines by diſſolving them, in which ſolution the water waxeth warme, as if it had been powred on quick lime, or like ſpirit of vitriol, or ſalt mixed with water, and powred on iron, and other metals; where continually and daily that water running through the mines whoſe nature and properties it imitates, carryes ſomething with it : wherefore there are ſo many, and ſuch various kinds of Baths as are the mines by which the water is heated. Let him that will not believe take any mineral of the aforeſaid quality, and wrap it up in a wet linen cloth for a little while, and he will ſee it experimentally that the minerall ſtone will be heated by the water, and ſo heated, as if it were in the fire, ſo as thou canſt ſcarce hold it in thy hand, which at length alſo by a longer action will cleave in ſunder and be conſumed like quick lime.

I will publiſh ſome time or other (God willing) more fully,and cleerly in a peculiar treatiſe this my opinion,which I have now delivered in very few words. Although to the ſick it be all one, and it matters not them, from what cauſe the baths come, and whence they borrow their vertues, if ſo be they may uſe them; this controverſie being left to natural Philoſophers that will controvert it, which none of them can better decide then a skilful Chymiſt, that hath the knowledge of minerals, metals, and ſalts.

And firſt of ſulphureous Bathes that have a ſubtil acidity.

IN the ſecond Treatiſe I have demonſtrated the manner of diſtilling ſubtile, volatile, ſulphureous ſpirits,*viz.* of common ſalt, vitriol, allome, nitre, ſulphur,antimony, and other ſalts of minerals, and metals, and their vertues, and intrinſecal properties, now alſo I will ſhew their extrinſecal uſe, as they are to be mixed with waters for Baths. The vertues therefore of Baths coming not from inſipid water, but from thoſe moſt ſubtile, volatile, ſulphureous, and ſalt ſpirits, but theſe being of themſelves not mixed with water unfit for Baths, to be uſed for recovering of health, by reaſon of their too great heat, and ſubtilty ; the moſt high God hath revealed to us unworthy and ungrateful men his fatherly providence ſhewing to us by nature the uſe of them, and the manner of uſing of them for the taking away of diſeaſes ; which (nature) being never idle, works unceſſantly, and like a handmaid executes the will of God, by ſhewing to us the various kinds of diſtillations, tranſmutatious , and generations. From which teacher we muſt learn all arts and ſciences, ſeeking a certain, and infallible information, as it were out of a book writ with a divine hand, and filled with innumerable wonders, and ſecrets. And this is a far certainer knowledge then that empty, and imaginary Philoſophy of thoſe vulgar diſputing Philoſophers. Doſt thou think that that true Philoſophy can be ſold for a hundred Royals? How can any one judge of things hid in the earth, who is wilfully blind in things expoſed to the light of the Sun, hating knowledge? I wiſh knowledge were ſutable to the name: how can any one that is ignorant of the nature of fire, know how to work by fire? fire diſcovers many things, in which you may as in a glaſs ſee things that are hid ; The fire ſhewes to us how every thing, waters, ſalts, minerals, and metals, together with other innumerable things are generated in the bowels of the earth by the reflexion of that central, and aſtral fire : for without the knowledge of fire all nature remaines vailed, and occult. Fire (always had in great eſteem by Philoſophers) is the key for the unlocking of the greateſt ſecrets, and to ſpeak in a word, he that is ignorant of fire is ignorant of nature with her fruits, and he hath nothing, but what he hath read, or heard, which oftentimes is falſe, according to that ; *He eaſily ſpeakes untruthes that ſpeaks what he hath heard.*

He that is ignorant knows not how to diſcern betwixt the truth and falſhood, but takes the one for the other. I pray thee, thou that art ſo credulous, doſt thou think that thy teacher writ his books from experience, or from reading other Authors? May they not be corrupted and ſophiſticated by antiquity, and frequent deſcription? Alſo doſt thou underſtand the true, and genuine ſenſe of them? It is better to know, then to think; for many are ſeduced by opinions, and many are deceived by faith that is without knowledge.

There are many indeed ambitious of ſciences, that are too covetous, and idle, loathing the blackneſs of coals, and the ruſt of the tongs, who had rather handle the viol and bandore, then coals, &c. And theſe are deſervedly compared to that young man of whom in the 19. *Cha.* of *Mat.* it is ſaid, he had a deſire to learn the truth, but was unwilling to follow Chriſt in poverty, and miſery. From proud Peacockes, and pratling Parrots, nothing but tedious clamours: whereas on the contrary, the auditors are refeſhed with the voyces of birds. Therefore that perverſe condition of man is to be bewailed, affecting rather the vanities of a proud world, then vertues and praiſe-worthy arts, then which nothing is more honeſt, and nothing more profitable after the word of God, revealing to us the will of God concerning charity towards our neighbor. And thus much for youths ſake I was willing to ſay, that they would not ſpend their tender yeers in vanities, but rather would make tryal in the fire, without which no man obtaines a true knowledge of natural things; which although it ſeem hard in the beginning, yet it is pleaſant in old age.

Now follows the mixture of thoſe ſubtile mineral, ſulphureous, and ſalt ſpirits with water.

AS concerning the weight of the aforeſaid ſpirits that are to be mixed with ſweet water, giving it the nature, and property of natural bathes, I would have thee know, that of thoſe, which in the ſecond part I ſhewed to be various, and divers, being, *viz.* not equal in vertue, the ſame weight cannot alwayes be ſo accurately obſerved: ſeeing alſo there is a conſideration to be had of their ſtrength, and of the ſtrength of the patient.

Now you may at the beginning mix one or two pound of the ſpirits to a ſufficient quantity of the water, and then by ſitting in it make tryal of the ſtrength of the artificial bath, which if it be too weak, is to be increaſed by adding a greater quantity of the ſpirits, but if it be ſtronger, then it is to be diminiſhed by abſtraction; of which more at large in *Arte noſtra Balneatoria.* Now this obſerve, that it is beſt to make Baths in the beginning weak, then ſtronger by little and little by degrees,as the nature of the ſick is accuſtomed to them, that it be not overcome by the unaccuſtomed uſe of them being too ſtrong. Wherefore Baths are to be uſed with diſcretion,and cautiouſly,for which matter I refer the reader to my *Artem Balneatoriam*, in which he ſhall find plaine, and perfect inſtruction; Let it ſuffice therefore that I have ſhewed the uſe of that Copper Globe, in heating Baths, which let the ſick take in good part, until more come. Now follows the uſe.

Of Sulphur Bathes.

APply the furnace with the Copper globe to the tub after the manner aforeſaid, and powre in a ſufficient quantity of ſweet water, which make hot with the fire kindled in the furnace by the help of the globe: which being ſufficiently warmed make the patient ſit in it, and powre into it ſo much of the ſulphureous ſpirit as is ſufficient; which being done cauſe that the tub be covered all over, that the volatile ſpirit vaniſh not, and as neceſſity requires, continue the heat till the patient come forth. Know alſo that the water is to be changed every time, and freſh ſpirits to be mixed. And this is the uſe of the Copper globe, in heating bathes of ſweet or medicinal water, and that either of vegetable, or mineral; and this made ſulphureous is by art or nature; whereby moſt grievous, and otherwiſe incurable diſeaſes are happily cured: Of which enough now in this Treatiſe.

The uſe of the Copper Globe in dry Baths, which are more excellent then the moiſt in many caſes.

I Might have put off this matter unto its proper Treatiſe, where all things ſhall be handled more largely, and cleerly: yet by reaſon of ſome unthought of impediments for a while procraſtinating the edition of the promiſed Treatiſe, I am reſolved to ſay ſomething of their uſe, after I have made mention of the humid, and indeed not only of the uſe of thoſe ſubtile, ſulphureous, and dry ſpirits, but alſo of the uſe of ſubtile, vegetable and animal ſpirits which are medicinal, becauſe in ſome diſeaſes dry baths are more commodiouſly uſed, then moiſt. He therefore that will provoke ſweat by a dry bath without water, let him provide a wooden box, or wooden inſtrument convenient to ſit in, ſtanding upon a ſtoole boared through that you may raiſe it up more or leſs according as you pleaſe, and having boards appoynted for the armes and feet to reſt upon. This box alſo beſides the great dore muſt have alſo a little dore ſerving for the puting in of a burning lamp with ſpirit of wine, or of any earthen veſſel with coals for to heat it. The box being well warmed, let the patient go in, and ſit upon a ſtool, let the box be very cloſe ſhut all about, and the furnace with the Copper Globe be fitted thereunto, under which let there be a ſmall fire kindled, by help whereof the volatile ſpirit growing warm, goeth forth into the box like a moſt ſubtile vapour, penetrating all about the patient. But when this ſpirit is not ſufficient to heat the box, ſet in it a burning lamp with ſpirit of wine, or ſome earthen pot with coales (the beſt whereof which are made of Juniper or the vine, eſpecially of the roots as being ſuch that will endure long, and cannot eaſily be extinguiſhed by the vapours of thoſe ſpirits) that the patient take not cold, and the vapours of the ſpirits may the better penetrate the body of the patient. Let the wick for the ſpirit of wine in the burning lamp be incombuſtible made of the ſubtle threads of gold, of which thing more in *Arte Balneatoria*. In the mean time that volatile ſpirit penetrates, and heates the whole body, and performes its office, being this way uſed better then by being mixed with water. When the patient hath ſate there long enough let him come forth, and go into a warme bed to ſweat. Now before he go into the box let him take a doſe of that volatile ſpirit, which is uſed outwardly to provoke ſweat, and accelerate the action. And by this means not only thoſe volatile ſulphureous ſpirits of ſalts, minerals and metals, are uſed outwardly without water to procure ſweat, but alſo the ſpirits of many vegetables, as of muſtard ſeed, garden creſſes, crude Tartar, alſo of animals, as hartſhorn, urine, ſalt Armoniack, &c. for the expelling of moſt grievous, and deſperate diſeaſes. Now the aforeſaid ſpirits have divers properties, the volatile ſpirits of ſalt, minerals, and metals have ſome, thoſe of vegetables and animals have others; thoſe have a ſulphureous and fiery eſſence; theſe a mercurial, and aerial; wherefore they ſerve for different uſes. In ſome diſeaſes thoſe ſulphureous are preferred; but in others vegetable and animal, where alſo a conſideration is to be had of the ſickneſs, and bath it ſelf, that one be not uſed for the other, to the great dammage of the ſick. For almoſt all natural baths, and volatile ſpirits of ſalts, minerals and metals partake of ſome moſt ſubtile penetrating, heating, and drying ſulphureous ſalt ſpirit; but the ſpirits of vegetables, and animals partake of a certain volatility that is moſt ſubtile, penetrating, heating, opening, cutting and attenuating, both urinous, and nitrous, *viz.* contrary to the former; as appeares by the pouring on of any volatile ſulphureous ſpirit, as of common ſalt, vitriol, allome, minerals, and metals, upon the rectified ſpirit of urin, or ſalt Armoniack: where preſently the one mortifies the other, and takes away its volatility, and ſubtilty: ſo that of both ſubtile ſpirits of divers natures there cometh a certaine ſalt of no odour and efficacy. Whence it is manifeſt that all ſpirits partaking of divers natures, and eſſences have not the ſame faculties. Therefore be thou cautious in giving moſt potent ſpirits, leſt thou give an enemy in ſtead of a friend, and learn their natures, vertues, and eſſences, before thou uſeſt them in medicine. But thou doſt aske, whether is that great force of thoſe ſpirits gone as it were in a moment? did it evaporate in that duel? No I ſay, but tranſmuted into a corporeal ſubſtance, for of a moſt pure, mineral, ſubtile, and moſt volatile ſulphur, and a moſt penetrating animal, *Mercury* is made a certain corporeal ſalt, which is wonderful, and deſerves to be called *Aquila* Philoſophorum, becauſe it is eaſily ſublimed with a gentle heat, in which many things lye: for it doth not only conduce to the ſolution of metals, eſpecially of gold, but alſo of it ſelf by the power of maturation doth become a moſt efficacious medicine: Of which no more at this time, becauſe I will only adviſe the reader, that he be diligent in ſearching out the ſpirits of nature, which although they change their bodies, yet are not therefore to be called dead, but rather reduced to a better perfection. And let this ſuffice concerning the dry uſe of baths in provoking ſweat for the expelling of diſeaſes: now for what diſeaſes this or that ſpirit ſerves, thou ſhall reader, find in its proper Treatiſe, of which there hath been mention above but in a word, know that thoſe volatile ſulphureous ſpirits of ſalts, minerals, and metals are good in all obſtructions of the inward parts, *viz.* of the ſpleen, lungs, and liver, but eſpecially are moſt excellent in heating the cold nerves, becauſe they do moſt efficaciouſly heat, attenuate, cut, expel, and mundifie, wherefore they are good in Contractures, Palſies, Epilepſie, Scorbute, Hypochondriacal Melancholy, Morbus Gallicus, Itch, and other corroſive ulcers, and Fiſtulaes, *&c.*

But the ſpirit of another kinde, as of Tartar, Hartſhorn, ſalt Armoniack, Urine, *&c.* are hot alſo, but not ſo dry, and beſides the heating vertue, have alſo a penetrating, cutting, mollifying, attenuating, abſterging, and expelling power; wherefore alſo they work wonderfully in all obſtructions of the inward and outward parts: for they do better then all others, open the pores of the skin, and provoke ſweat, mollifie, and open the hemorrhoides; provoke the *menſes* of young and elder women, purge and heat the womb, and therefore cauſe fruitfulneſs; they heat and purge a cold and moiſt braine, acuate the intellect, and memory, let they that be great with child take heed of them,and alſo they that have a porous open skin. Such and other more properties,and that deſervedly are aſcribed to theſe ſpirits. Now thoſe two aforeſaid baths (in one whereof thoſe ſpirits are uſed in a humid way, being mixed with warm water, for the whole body to be bathed and ſweat in, but in the other in a dry way where the vapours are by force of the fire made under the Globe, forced up into the ſweating box towards the patient, which being uſed after this manner do oftentimes penetrate, and operate more efficaciouſly then that humid way) are not to be ſlighted for the recovery of health, as doing things incredible. Now thoſe ſpirits not being found in ſhops, nor being to be made by any according to the manner that I have ſhewed in the ſecond part, I would have thee know that there is yet another matter, which needs not to be diſtilled, and it is mineral; which being put into the Copper inſtrument doth of its own accord without fire yield ſuch a ſulphureous ſpirit, which penetrates very much and goeth into the ſweating box, like in all things to that which is made out of ſalts,minerals, and metals. Nature alſo hath provided us another matter that is to be found every where, which being in like manner put into the inſtrument doth by it ſelf,and of its one accord without fire yeild a ſpirit, in vertue not unlike to that which is made out of crude Tartar, or ſalt Armoniack, Soot, Urine, &c. Of which in the ſecond part, doing,*viz.* the ſame things with that which is made with coſts and labour. Thoſe foreſaid 2. matters therefore can do the ſame things,which are required for a bath and ſweating, which thoſe two foreſaid kinds of ſpirits,*viz.* mineral and ſulphureous, vegetable and animal can do,&c. Now what thoſe two matters which are eaſily every where to be found are,thou deſireſt to know; but I dare not if I would, for the ſake of the pious, to reveal them for the ſake of the ungrateful, and unworthy. For it is an offence to caſt pearle before ſwine, which yet the pious may,by the bleſſing of God, finde out by the reading of the reſt of my writings.

Now follows a wooden veſſel which is to be uſed in ſtead of a Caldron in boyling of Beer, Metheglin, Vinegar,&c.

MAny things might be ſaid concerning this matter,for although men may be found in any part of the world who know how to make malt of corne, and of this beer and vinegar; yet many things may be ſaid of this matter for the correcting of it; but becauſe it is not my purpoſe to ſhew ſuch things now, yet I ſhall ſay ſomething of the uſe of that copper globe which any one may provide in ſtead of Caldrons, and which is to be uſed with a certain wooden veſſel in the boyling of beer, which by this way he may, as hath been ſpoken above concerning the operations, make as well as by the help of Caldrons. Moreover I could here alſo teach ſome other moſt profitable ſecrets, *viz.* how honey may be freed from its ungrateful odour, and taſt by the help of precipitation; and how afterwards a moſt ſweet ſpirit is to be drawn out of it very like in all things to the ſpirit of wine: alſo how the beſt and ſweeteſt wine cleer, and durable like to Mallago, may be made thence: alſo how after purging it is to be cryſtalliſed, ſo as to reſemble Sugar-candy in goodneſs and taſt: alſo how the ſweetneſs thereof may be converted into Tartar, very like to the natural: Alſo how out of fruits of trees, as cherries, apples,pears,*&c.* a very good,and durable wine in goodneſs, colour, taſt and vertue, like to the natural, may be made; alſo how out of unripe grapes, that are not maturated either by the inclemency of the country, or aire, their acidity being changed into ſweetneſs very good wines like to the Rheniſh may be made: alſo how out of ſorrel, and other vegetables a very good Tartar may be made, and that in a great quantity without much coſts, reſembling the Rheniſh in colour, taſt and other vertues: Alſo how out of Corne, (whether malted, or ground in a mill) a very good ſpirit is to be made, and alſo a very good vinegar like to the Rheniſh; alſo how of corne, ground in a mill, or meale, a very good ſpirit is to be diſtilled without any loſs of the meale;

meale, continuing yet fit to make bread. Such and more of this ſort may be taught in this place, but becauſe it is not good to divulge all things together, and at once, and this book would by this means grow bigger then I am willing it ſhould, if ſuch things ſhould be here taught, I ſhall make an end of this book (omitting other excellent poſſible ſecrets of nature) which although it be but little, yet will without doubt be profitable to many. And ſo Reader farewell.

FINIS.

THE FOVRTH PART OF THE PHILOSOPHICAL FURNACES: IN WHICH Is deſcribed the Nature of the FOURTH FVRNACE;

By the help whereof Minerals, and
Metals are tryed, and examined after a
more compendious way, then hitherto
after that common manner;
ALSO
The ſeparation of Metals by the force of Fuſion, and
other neceſſary things that are done by the power
of fuſion or melting.
Moſt profitable for Chymiſts, Tryers, and Diggers of
MINERALS.

By JOHN RUDOLPH Glauber.

LONDON,
Printed by *Richard Cotes*, for *Tho: Williams* at the ſigne
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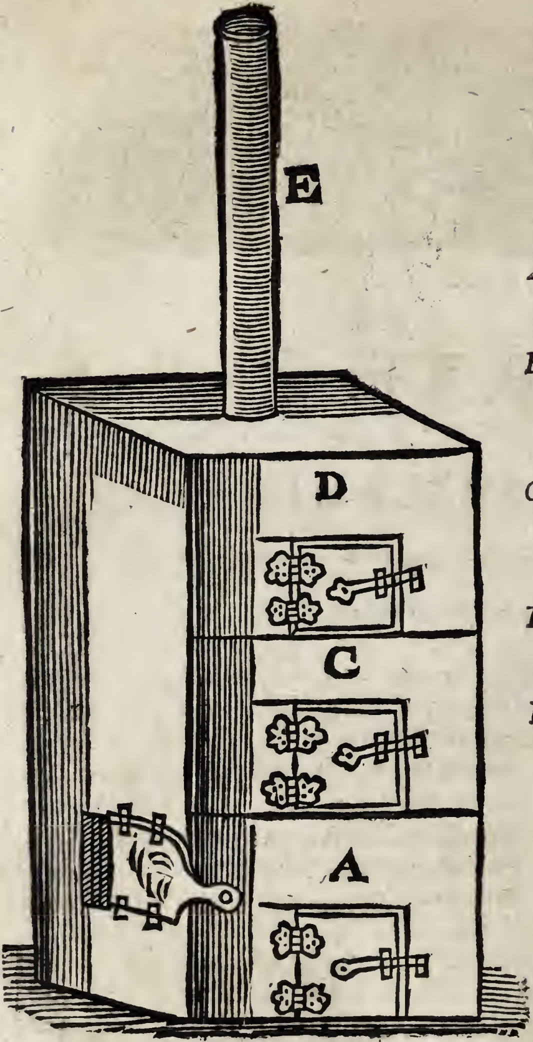

A. The place of aſhes with its dore.

B. The Regiſter appointed for governance of the furnace.

C. The hole with its dore aſſign'd to receive the crucibles & coals

D. The hole with the dore of the firſt Story.

E. The long pipe of Iron in the top of the furuace.

THE FOVRTH PART OF PHILOSOPHICAL FURNACES.

Of making the Furnace.

THis Furnace may be made greater, or ſmaller, as you pleaſe, according to the matter to be tryed: and if the *Diameter* thereof within, be but of one foot, you may in it ſet a crucible containing two or three pound: but greater crucibles require a greater furnace. Now this furnace muſt be quadrangular, and be built of ſtones, and lute, ſuch which abide the fire, of the height of one or two feet from the bottom to the grate, which muſt be ſuch as may be cleared from the droſs mixed with coals, or ſuch as was the grate of the firſt furnace, conſiſting of two ſtrong croſs iron bars faſtned in the furnace with certain diſtances for the receiving of 5, 6, or 7 other leſſer, iron bars which are to be moveable, ſo that when they are obſtructed they may be removed; and cleared from the droſs; the lower part of the furnace muſt have near the bottom a hole (in the forepart) of the height, and breadth of a little ſpan, with an iron or copper doore, ſhutting cloſe: the lower part alſo muſt have another hole near the grate on the other ſide with its regiſter for the government of the fire, and for the attracting of wind. Above the grate, and a hand breadth from the grate muſt be another hole for the putting in of coals, and crucibles, ſutable to the proportion of the furnace, and the height thereof muſt be of one foot, and the latitude of half a foot, if the inward Diameter of the furnace be of one foot, whereby the crucibles may be the more conveniently handled, and the coals be caſt in with a fire-pan; Let this hole alſo have a very ſtrong door of ſtone covered over with lute, either of which may endure the fire, and ſhut very cloſe, that the fire may thereby (when the crucible is placed in the fire) attract air, but onely from the collateral hole under the grate. Let the height of the furnace (being coated above) from the hole appointed for the putting in of coals and crucibles, be of one great ſpan: Let there alſo be a round hole in the furnace, having the third part of the intrinſecall diameter of the furnace, appointed for the flame, and ſmoak; to which if you will uſe a very violent fire, put to it a ſtrong iron pipe of the height of 5, 6, 8, or 12 feet; for by how much the higher you ſet your pipe, the ſtronger fire may you give, and if you will you may erect above the furnace 1, 2, or 3 partitions with their doores ſerving to divers uſes according to the flame that is gathered into them, by reaſon of divers degrees of fire, which is in them, for the loweſt is ſo hot, that it can eaſily contain in the flux fuſible metals, minerals, and ſalts; and ſerve for cementation, calcinations, and reverberations; alſo for burning of crucibles, and other earthen veſſels, made of the beſt earth (of which in the fifth part) and for vitrifications, and ſometimes for trials and burnings, &c. The ſecond diviſion of heat which is more remiſs, ſerves for the burnings of minerals and metals, as of lead, tin, iron and copper, that are neceſſary for calcinations; alſo for the neceſſary calcination of Tartar, and the fixed ſalt of other vegetables, that is required in chymical operation, as alſo the calcining of bones, & horns for cuples, and the aſhes of wood. The third diviſion or chamber is yet more remiſs, and ſerves for the drying of crucibles, and other veſſels that are made of the beſt earth, and are afterwards to be burnt in the firſt partition. There may alſo other things be done by the help of theſe partitions, ſo that thou needeſt not for their ſakes kindle a peculiar fire. But if thou wilt give a melting fire the ſtrongeſt of all, put a long pipe to the lower hole appointed for drawing wind, and having a regiſter; for by how much the fire attracts the air more remotely and another flame is forced to beat upon the metals, ſo much the greater power of the heat is there in the fuſion of them. For which buſineſs ſake thou haſt need to have as that inferiour pipe, ſo alſo that ſuperiour pipe in the top of the furnace. And if thou haſt a fit chamber, in which another may goe up from below by the proper chimney, thou mayſt build another furnace in the ſuperiour chimney, and perforate the wall with the applying of a regiſter, that the fire may be forced to attract the air from below through the collateral chimney, where you need not that long pipe but onely may open a doore, or window of the lower chamber, that the aire may come into the chimney; and the fire attract the wind out of the collateral chimney, which it doth very vehemently, yea and ſtronger, then if it were helped with bellows, ſo that even the furnace, unleſs it were built of very good and fixed earth, would by too great a heat be deſtroyed; For oftentimes the ſtrongeſt crucibles melt with too much heat, wherefore a regiſter is made for the governing of the fire.

And by the help of this furnace, with Gods bleſſing, I found out my choiceſt ſecrets. For before, and indeed from my youth I underwent the trouble of thoſe vulgar labours performed by bellows, and common vents, not without loſs of my health, by reaſon of the unavoidable malignant and poyſonous fumes, which danger this furnace was without, not onely of poyſonous and malignant fumes, but alſo of all exceſſive heat: For our furnace ſends forth no fume (but above, o drawing, that the dore being opened for the putting in of Coals, it attracts by the vehemency of the fire, another fume, that is remote by the diſtance of halfe an ell. And becauſe the fire doth ſo vehemently attract, it keeps its heat within it ſelf, ſo that there is no fear of burning; yet you muſt cover your hand that holds the tongs with a linnen glove twice double, and wet in water, and with the other hand a wooden fence that is perſpectible to preſerve your eyes: otherwiſe it wants all danger of vapours, or fumes, as hath been ſaid, and all exceſſive heat: that which is a great benefit in Art. I doe ingenuouſly confeſs, if I had not found this a few years ſince, I had not without loſs left off all Alchymy together with its tedious labours. For I had ſpent many years of my life in great miſery of my labours, in ſuperfluous cares, and watchings, as alſo in ſtinks, ſo that going into my Elaboratory with loathing, I ſhould behold ſo many materials in ſo many, and ſuch various pots, boxes, and other veſſels, and alſo as many broken as whole inſtruments of earth, glaſs, iron, and copper, and did judge my ſelf ſo unhappy that I had made my ſelf a ſlave of this Art, and eſpecially becauſe ſcarſe one of 100, whereof I was one, did get his victuals and cloths thereby. For theſe reaſons I was determined to bid farewel to Chymiſtry, and to apply my ſelfe to Phyſick, and Chirurgery, in which I was alwayes happy. But what? Whileſt I thought to do as I reſolved, and to caſt forth of the doores all and each veſſel of divers kinds, I found ſome crucibles broken, and in them many grains of gold and ſilver, formerly melted in them, which together with others gathered together, I thought to melt; but ſeeing I could not melt ſuch things being very hard to be melted, without the helpe of bellows (which I had ſold) I began to conſider the matter with my ſelf more ſeriouſly, and ſo I found out this furnace, and being invented, I preſently built and proved it, which in tryings I found ſo good, that I did again take hope of my labours, and would no more deſpair.

Seeing therefore an eaſie, and compendious way of melting metals, I began to work, and to begin a new ſearch, and every day I found more and more in nature, *viz.* the greateſt and moſt pleaſant ſecrets of nature; wherefore I did without ceaſing ſeek, until God had opened mine eyes to ſee that which I ſought a long time for in vain. Where alſo I obſerved, that although I had before had more knowledge of nature, yet without this furnace I could ſcarſe have done any thing that had been ſingular. And ſo God willing, by the help of this ſurnace, I found out more and more dayly, for which bleſſing I give to the immortal God immortal thankes, reſolving to communicate this new invention candidly, and faithfully for the ſake of my neighbour. Judge therefore O Chymiſt! whether this, or that which is made by the help of bellows and common vents, be the beſt? For how long doth he that will melt a hard metal in a wind ſurnace give fire to it before it will flow, and with what loſs of time, and coals? He that doth melt by the help of bellows hath need of a companion to blow, with great danger of breaking the crucible with the winde, and of making it fall when the coals are abated, or of impurities falling into the crucible in caſe the cover thereof ſhould fall off, although there can be no detriment by impurities falling in, if the matter be metallick, but not ſo if it be a ſalt or a mineral, (without which that cannot be perfected in the fire) not induring the impurities of the coals, but boyling over by reaſon of them. Now our furnace is free from this danger, becauſe the wind comes from beneath and crucibles come alwayes into ſight, not being ſo overwhelmed with coals as in the common way, &c. For by this means the matter to be melted is flowed, although the crucibles be not covered over with coals, nor with a cover, and although thou haſt not a companion to blow, for you may at pleaſure give any degree of fire by the direction of the regiſter. When therefore thou makeſt any trial in the fire have this furnace, which is recommended to thee, which build rightly with its regiſter for the governing of the fire, and for the drawing of wind, and without doubt this labour ſhall not be in vain.

How minerals are to be tryed.

THe manner of trying minerals hath been already made known, wherefore it is not needful here to write many things, becauſe divers authours, as *Georgius Agricola*, *Lazarus Ercker*, and others have ſufficiently wrote thereof, to whoſe writings I refer thee, eſpecially to that moſt famous *Lazarus Ercker* which is ſo much commended., *De Probatione Mineralium*, as well malignant (obſtinate) as mild. But thus much know being that which experience hath alſo taught us, that neither he nor his predeceſſours had a perfect knowledge of all things, nor would reveal all things they knew. For many excellent things doe yet lye hid, and perhaps ſhall yet for a while lye hid by reaſon of the ingratitude of the world; although the moſt famous Philoſophers doe with one conſent affirm that imperfect metals, as lead, tin, iron, copper, and Mercury, are intrinſecally gold, and ſilver, although it may ſeem very improbable to many that are not curious, but contented with the opinions of their parents; ſuppoſing thoſe minerals to be barren that leave nothing in the cuple, when they are tryed with lead: when as yet that proof by cuples although famous, is not yet that true Philoſophical trials of metals, but only vulgar, according to the teſtimony of Philoſophers, as of *Iſaac Hollandus*, and others, eſpecially of *Paracelſus* in many places treating of metals, but eſpecially in his book *Vexationum Alchymiſtarum*, containing a true deſcription of the properties, and perfection of metals. Which although not being to be underſtood by all, matters not; for a very eaſie art is not to be communicated to all, according to *Paracelſus* ſaying. Imperfect metals being freed from their impurities have in them aboundance of gold, and ſilver. But how metals are to be purged, and ſeparated he doth not teach, but only commends *lead* to be the authour; which made the Alchymiſt beleive that it was common lead, not knowing that the water thereof (lead) did not only purge other metals, but alſo lead it ſelf; ſuppoſing alſo that the trial of tin, copper, and iron,

iron made in a cuple with lead to be that true genuine bath thereof; not obſerving that lead hath no affinity with iron, and tin in a ſtronger fire, but to reject what is black, and uncleane without any perfection. Now this lead can doe, if *viz.* it be mixed with a mineral that hath gold or ſilver in it, and be melted in the fire being incorporated with it, it may together with their impurities enter into the Cuple, the good gold and ſilver being left in the Cuple, which is the proofe of minerals that are digged, and uſed; and it is done upon this account, *viz.* gold and ſilver may be naturally purged of their ſuperfluous ſulphur, ſo as never to be any more radically united, and mixed with thoſe that be imperfect, as being polluted with aboundance of crude, impure ſulphur, although they may, be melted together in the fire; yet that mixture being retained in the fire, the combuſtible ſulphur of common metals, acts upon its own proper argent vive, and turnes it into droſs, which being ſeparated from the metals enters into the porous matter of the cuples, that which doth not happen in teſts, fixed in the fire, which that droſs being ſeparated from the metals cannot enter into, being made of an earth that is durable in the fire, the droſs remaining in them, which otherwiſe was wont to enter into thoſe cuples that are made of the aſhes of bones, or wood. Wherefore by little and little it goes away into the cuple, *viz.* as much as the fire reduced into a Litharge, or droſs, until all the Lead mixed with the Gold, and Silver together with other imperfect metals mixed with it goe into droſs, and hide themſelves in the cuple, the pure gold and ſilver being left in the cuple. For Lead in a plain veſſel, feeling the heat from above, but beneath cold, is turned into a Litharge, which if it be in an earthen fixed veſſel, the Litharge remaines, and goes into a yellow tranſparent glaſs at laſt, if it be not mixed with other metals, as iron, copper, tin; which being mixed therewith give to the glaſs a green, red, black or white colour, according to the quantity of the metallick matter: but in a porous cuple made of aſhes, the Litharge, or droſs finding pores enters into the cuple by little and little, and ſucceſſively, until all the Lead be entred in, which it could not be if it were turned into Litharge. This vulgar trying is therefore nothing elſe but a tranſmutation of Lead, with the imperfect metals mixed with it, into droſs, which entring into the cuple leaves in the cuple pure gold, and ſilver, that cannot be turned into droſs by reaſon of their purity.

But perhaps this diſcourſe may ſeem to thee unprofitable, and ſuperfluous, becauſe this trial of metals is known all the world over: but for anſwer, I ſay that is not ſuperfluous, becauſe many refiners erre, ſuppoſing that corporeal Lead together with the imperfect metals that are mixed with it, goes into the cuple, not being yet turned into *Litharge*, becauſe corporeal Lead is again melted from thence; for whoſe ſake this diſcourſe is not properly ordained as being thoſe that operate out of uſe, and cuſtome onely without diſcretion; but rather for their ſakes, who doe inceſſantly ſeeke after, and ſearch into the ſecrets of nature, *viz.* ſeeking after that philoſophical tryal, which is known to few, by the help whereof more gold and ſilver is obtained then by that common way, but it is not to be diſcovered in this place; for all muſt not have the knowledge thereof; It is ſufficient that I have demonſtrated the poſſibility thereof. Yet know this, if thou knoweſt how to prepare Lead, Tin, Copper, and Iron, and to fit them to the radical union, *viz.* that aforeſaid water of Saturne, ſo as they may endure the force of the fire together, thou mayſt ſeparate and attract gold, and ſilver from the aforeſaid imperfect metals, and with gain leaving them in the cuple, or elſe you ſhal draw little or nothing from thence. And if you do intend to try them with Lead after the vulgar way, and bring them into droſs, yet you doe nothing becauſe tin, and iron abounding with gold and ſilver, do not remain with the lead in a ſtrong fire, but are lifted up like a skin or droſs, by reaſon of their ſuperfluous ſulphur, ſwimming like fat upon water, without any ſeparation, unleſs it be tin or iron, which got gold or ſilver from the mine in their firſt fuſion.

And by this means it fals out ſometimes, that ſome may

mak

make a good proof but out of ignorance, not knowing a reaſon of their operation, wherefore they cannot do the ſame again. For if Chymiſts, and Refiners did conſider the matter more profoundly, enquiring the cauſe, wherefore lead being tryed, deprived of its ſilver, and melted in a cuple, ſhould yet contain in it ſelf ſilver, without doubt they would hit upon a good foundation; without which knowledge all their labour in imperfect metals would be in vain. And let this ſuffice concerning that Philoſophical tryal, which is known to few; There is no need of ſpeaking any thing of that vulgar, being every where known, of which *Lazarus Ercker* wrote plainly and fully.

There is alſo another proof of minerals, which is without Lead, with Venice, or any other good fuſible glaſs, where one or two ounces of the powdered mineral are mixed with half an ounce of the powdered glaſs, and being mixed and covered in a crucible, are melted, and powred out; by which means the glaſs attracts, and diſſolves that mineral, and is thereby coloured, which ſhews what metall is contained in the mine, after which may be made another tryal by Lead afterwards, tryal being firſt made to know the firſt proof. And this is the fitteſt proof for the hardeſt minerals, which are even invincible, as are the ſtone *hæmalitis*, *ſmiris*, granats, talck black and red, and thoſe which abound oftentimes with gold, and ſilver, which becauſe they cannot be mixed with Lead are not eſteemed, but are oftentimes caſt away, although they abound with gold and ſilver, and this becauſe they cannot be tryed, Which being tryed after the aforeſaid, and conſequently the treaſures lying therein being diſcovered, thou maiſt afterward with more confidence handle them, and reduce them to better profit. Now thoſe colours which follow, indicate the tenure of them. Glaſs reſembling the greenneſs of the Sea ſignifies meer Copper, but the greenneſſe of graſs, ſignifies copper, and iron mixed together: glaſs of a ruſty colour ſignifies iron: yellowiſh glaſs ſignifies tin: glaſs of a yellow golden colour, or like a red rubie ſignifies ſilver: Blew glaſs like a ſaphir ſignifies pure gold; a ſmaragdine ſignifies gold mixed with ſilver: An Amethyſt colour ſignifies gold, ſilver, copper, and iron mixed together. Beſides theſe, glaſs ſometimes gets other colours, according to the diverſity of the weight of divers metals mixed together; which uſe will teach with a further practiſe that is to be made with Saturn.

There is alſo another precurſory tryal of minerals, and metals, which is made with Salt Petre; where eſpecially tin, iron, and copper doe largely draw forth their treaſures hid in them, which they will not yeeld being tryed by Lead, that which is not a ſign of their poverty, but rather of not a true tryal made by Lead, which is not the true, and genuine judge, and trier of metals. For otherwiſe (if it were) it would draw forth their treaſure as well out of a greater quantity of metallick matter, as out of a leſſer. Now followes the tryal by Nitre: Make a mixture of one part of ſulphur, of two parts of pure Tartar, and four parts of purified Nitre, then take an ounce of this mixture, and one dram of the mineral or metal ground ſmall, mix thoſe together, and being put into a crucible, put a red hot iron or burning coal to them, and that mixture will be enflamed, and yeeld a moſt vehement fire, reducing that mineral or metal into droſs: And what is not brought into droſs muſt again be mixed with the aforeſaid mixture, and be burnt as before, until the whole be conſumed by the fire. Then make that droſs or ſalt containing in it the metal that is deſtroyed, to flow ſo long in a ſtrong crucible, until it be made glaſs; which being powred out there are found graines of gold or ſilver, which came from the minerall or metal that was tryed. And this operation (if it be well done) will be a pleaſant ſight, but without profit, becauſe it cannot be done in a great quantity, and by reaſon of the price of the Nitre. Where I ſet this way of tryal only for demonſtration ſake that it might appear how almoſt all tin, iron, and copper, contain in them gold and ſilver, although they doe not draw it forth in the Cuple.

Now doe not ſuppoſe that this is tranſmutation, which is onely ſeparation; wherefore thou muſt conſider with thy ſelf how that may be performed otherwiſe. But take heed that thou do not kindle this mixture from beneath, being put upon the coals, but from above by reaſon of the danger of flaſhing: Alſo metals are eaſily fuſible by the following mixture. Take one part of the ſaw duſt of the wood of the teil tree being well dryed, two parts of ſulphur, eight or nine parts of pure Nitre. Make *ſtratum ſupar ſtratum* in a crucible, and take to 11, or 12 parts of this mixture, one part of the metal ſubtilly ground, and kindle them, and the mine being melted will yeeld grains of pure Gold, and Silver, if the mine were not too impure, the impurity thereof being conſumed by that moſt vehement fire. And if this tryal be not for thy profit, yet it is rational, and may be for thine inſtruction.

Of the melting of mines and metals.

THe melting of theſe in a greater quantity is not for this place, becauſe they cannot be done by this furnace, but it is treated of plainly enough by others in their writings of minerals.

Of the ſeparation of metals.

THis is a moſt ancient and profitable Art, whereby one metal may be ſeparated from another: And it is for the moſt part done 4 wayes, *viz.* by *Aqua Fortis*, by cement, by flux with ſulphur, and lead, and laſtly by Antimony, which wayes that moſt witty *Lazarus Ercker*, hath clearly, and diſtinctly deſcribed, whoſe deſcription is not to be found fault with, although ſome neceſſary things may be added thereunto, which being but few I thought it ſuperfluous to adde them in this place.

And that ſeparation conſiſts in three chief metals, Gold, Silver, and Copper: he made no mention of other metals, and two of the aforeſaid four wayes are in uſe, as very eaſie, for they are done with *Aqua fortis* and Cement, the two others moſt commonly neglected, which are done by benefit of melting with Sulphur and Lead; and alſo by Antimony: that which is admirable, becauſe metals are eaſier ſeparated by benefit of theſe two wayes then by *Aqua fortis* and Cements, ſuſpected of waſt, whereas not Sulphur and Antimony, but the ignorant worker, not knowing the nature of Sulphur and Antimony, is rather to be blamed, becauſe he knows not how to order them, and withall leaves the nearer way of ſeparation: and I muſt needs confeſs it that without this furnace I would not ſeparate with them, becauſe with that common way of furnaces and bellows, that ſtink of Sulphur and Antimony hurtful to the Liver, Lungs, Brain, and Heart, is received by the Noſethrils to the hazard of health: for which cauſe I do not wonder that thoſe two wayes requiring greater diligence than thoſe two former by *Aqua fortis* and Cements are rejected. But this Furnace being known with which without danger one may melt, I doubt not of excelling the two former wayes hereafter as more profitable than them. For he who knowes Antimony may not onely eaſily with ſmall coſt ſeparate Gold from the addition without any loſs of it, and ſpeedily refine it, but alſo eaſier ſeparate gilt ſilver, than by Sulphur, Lead, &c. in great ſtore without any loſs of Gold or Silver.

And this is the eaſieſt way of the ſeparation of Gold and Silver which is done by the benefit of melting, requiring no more charge then the coals; for there is Antimony which hath Gold in it as much as it is worth, which will be the Separatours gaine: I would have you know this how Antimony may again be ſeparated from Gold and Silver, not by the common way which is done by bellows, but by the ſpeciall way of ſeparation wherewith Antimony is preſerved, ſo that it may be uſed again for the ſame purpoſe; which I will treat of in another place. Beſides the four wayes ſpoken of, there is alſo another way, beſt of all, by the nitrous ſpirit of ſalt, namely after this manner: ℞ the ſpirit of ſalt (prepared by our firſt and ſecond Furnace) exaſperated with Nitre diſſolved in it, to which adde grain Gold mixed with Silver and Copper; put it in a glaſs vial in hot ſand to diſſolve, and the Gold together with the Copper will be diſſolved in it, and the Silver left in the bottom of the vial: decant off the ſolution, to which adde ſomething, precipitating Gold, and make them boil together and the pure fine Gold will be ſeparated and precipitated like the fineſt meal, ſerving writers and Painters; the Copper being left in the water; which thou mayſt if thou wilt precipitate from the water, but it is better to take away the water, which will ſerve again for the ſame uſe. If the precipitated Gold be waſhed and dryed it gives in the melting (by which nothing is loſt) the beſt and pureſt Gold. For finer gold can neither be made by *Aqua fortis* nor by Antimony.

Therefore this is the beſt way of all, not onely for the ſmall coſt, but alſo for the eaſineſs yeelding the beſt Gold of all others.

Then take calcin'd Silver left in the gourd, ſweeten and dry it, which done make a little ſalt of Tartar to melt in a crucible, to which by courſe put a little refined ſilver with a ſpoon, and it will be preſently made a body without any loſs. You may alſo boil that Calx as yet moiſt newly taken out of the gourd with the Ley of Salt of Tartar, even to the evaporation of all moiſture: and melt the dry remnant, where alſo nothing is loſt. Without this medium of Silver the calcination (drawn from *Aqua Regia*) is not fuſible of it ſelfe, turning into brittle matter, like horn that is white or of a middle colour between white and yellow, called therefore of Chymiſts the *Horn of the Moon*; in reducing which many have tried much, which reduction we have already taught. For want of ſpirit of ſalt take *Aqua Regia* made of *Aqua Fortis* and ſalt Armoniack, which doth the ſame, but with greater charges. This alſo is to be preferred before other wayes, which makes to the ſeparation of any Gold of any degree, if ſo be it exceed Silver in weight; which is neceſſarily required in the ſolution made with *Aqua Fortis*.

But that you may ſee the prerogative of this ſeparation, marke a little when thou ſeparateſt by *Quarta & Aqua fortis*, you muſt put juſt two or three parts of refined Silver to one of courſe Gold, where firſt the coſt and labour of refining the Silver to be melted and grained with Gold are required: then a good quantity of *Aqua fortis* to diſſolve, precipitate, edulcorate, dry and melt a great deal of ſilver. Conſider then I pray my labours and charges of my ſeparation and the vulgar. When thou ſeparateſt with Cements there is need of boxes, and continuall fire of one degree, which labour is tedious for times ſake, and coſtly for coals, which labor you muſt twice or thrice take in regard of the mixt droſs. Now again conſider the labour and charges of both ſeparations. When thou ſeparateſt by Sulphur and Antimony which is the beſt way, without great charges, if thou knoweſt to ſeparate Gold from Antimony without blowing, but this is tedious for thrice greater labours then our way, tedious indeed for hard and perfect ſeparation of Gold and Silver from Antimoniall droſs. Think therefore what way of ſeparation you will uſe to refine Gold ſpeedily, ſurely you will chuſe mine.

This Prerogative alſo hath this way of ſeparation, that it hath no need of refined ſilver which is done by the benefit of burning, but only it's granulation, ſolution or ſeparation by the uſe of *Aqua Fortis*, where though copper mixt with ſilver makes waſt, yet by the help of this ſalt it is ſoon precipitated. By this means gilt ſilver is ſoon ſeparated, the gold being diſſolved by a nitrous ſpirit, and precipitated with the aforeſaid matter precipitating, it's for the ſeparation of gilt ſilver done by help of fuſion, none is eaſier done then what is with Sulphur and Antimony, where when the neceſſary manual (ingredients) are known; a great deal is ſeparated in ſhort time, but knowing not to uſe Antimony and Sulphur (for which our Furnace very well befits) leave them and uſe the common way; therefore lay not thy fault afterward on me writing for thy good.

Of ſeparating courſer metals.

THe manner of ſeparating Tin from Lead and Copper from Iron, whithout loſs of both metals, by preſerving both; which ſeemes impoſſible to me for the combuſtibility of both metals; and ſuperfluous for the ſmall profit and ſaving charges. How Gold and Silver may be ſeparated from Tin with which commonly this abounds, without any waſt, hath been long ſought to no purpoſe: but a poſſibility will appeare to a ſerious conſiderer; and though I never tryed in great quantity, content with precipitation made with a little; I am yet perſwaded this buſineſs will ſucceed in a great quantity and with much profit; namely by the help of a Furnace made on purpoſe where gold and ſilver precipitated with lead and *Halb Kopf* by extream heat of fire; that tin is extracted to the quantity of the tenth part, which remainder you muſt peculiarly take and keep. Which done you muſt precipitate new tin in the foreſaid Furnace, and ſo extract to the remainder of the *Regulus* which extract again: the firſt receiv'd is to be added and reſerved; which labor is to be reiterated, till thou haſt a ſufficient quantity of *Regulus* filling the Furnace; which again thou muſt precipitate; for by this means gold and ſilver are brought together, ſo that they may eaſily afterward be ſeparated from the ſuperfluous tin. By this means I count the ſeparation profitable, where but little ſubſtance is loſt, which is turned into aſhes and ſmoke. Nor doth adding lead and *Halb Kopf* hinder, becauſe ſometime lead is mixt with tin, and *Halb Kopf* ſeparated againe. It is good therefore to ſeparate pots and old diſhes, for the mixture of lead, and to precipitate gold and ſilver from them, by the adjection of *Halb Kopf* only, where the reſidue is no way altered from *Halb Kopf*, therefore thou mayſt ſell it or refine it again: which I ſuppoſe will be to thy great advantage.

What is to be held concerning the perfection of Metals.

THis knot is ſcarſe ſoluble, for ſo many and divers opinions of ſo many ages, ſo that moſt men ſleighting the teſtimonies of true Philoſophers, will not beleive the truth, eſpecially becauſe ſcarſe one of an hundred can be found who is not impoveriſh't with this art: the incredulous therefore is not to be blamed for his doubting, no ſigns of truth appearing, yet experience teſtifies a poſſibility by art and nature, though examples are rare. I pray with how great abſurdity ſhould one deny heaven and hell never ſeen? But thou ſayeſt we muſt beleeve this as revealed by God his Prophets and Apoſtles; but ſo is not this, but the Philoſophick traditions of heathens. I anſwer, though moſt Philoſophers were heathen (yet ſome have been Chriſtians) yet their works are not to be deſpiſed, becauſe not handling our ſalvation: to whom if Chriſt had preached, ſurely they had beleived him. For it appears by their Books that they were pious and honeſt men, who though not profeſſours of Chriſt, yet they did his will indeed, which we though not in words, in action deny; who if they had been wicked, why took they ſuch paines in making bookes for the good and profit of their neighbour about vertue and piety? Why ſpent they not rather their lifeſtime in leiſure and pleaſure, as is the cuſtome now adayes with them who are appointed to inſtruct us? Why ſhould they gul poſterity with trifles and lyes, expecting from thence no profit? for moſt of them were not poore, but very rich Kings and Princes. Beſides theſe there have been many Chriſtians ſeriouſly confirming the truth of the Art, men indeed of ſpeciall note, namely Biſhops, Doctors, &c. Such were *Thomas Aquinas*, *Albertus Magnus*, *Lullius*, *Arnoldus*, *Roger Bacon*, *Baſill*, &c. Why ſhould very pious men deceive poſterity with their workes, and reduce them into errors? Though there remain not the works of famous Worthies, yet there would be a plain confirming the truth of this Art. For I am perſwaded there are ſome to be found having this knowledge and privately poſſeſſing it. For who is ſo madd to reveal himſelf to the world, to receive nought but envy for his reward? Let no man therefore doubt of this ſecret Art's truth. But ſay you: Why ſtand you ſo much for the Art? Did you ever ſee or perform any thing in it? I reply, though I never made projections to perfect metals, nor ſaw tranſmutations; yet I am ſure of this, I have often from metals with metals, leaving no gold and ſilver in the cupel, extracted gold and ſilver by the help of fire: But I will not have you think that one imperfect metal will perfect another, or turn it into gold or ſilver, impure and droſſie without, in compariſon of gold and ſilver; for how can ſuch metals perfect another imperfect? which thus underſtand. For as in the vegetable kingdom water cleanſeth water, or juice with ſeething as is wont to be done in purifying honey and ſugar, or any other vegetable juice, with common water and white egges: ſo alſo you muſt underſtand of mineral juices or metal, of which if we know the water and white, ſurely we might refine the impurity, in which gold and ſilver lye hid, as in black ſhales, and powerfully extract gold and ſilver, which is not a tranſmutation of metals, but an eduction of gold and ſilver from the dunghil; Doſt thou ask how gold and ſilver can be educed from copper, iron, tin, and lead, to wit, by the help of lotion, out of which none is drawn with that beſt probe, (as 'tis thought) of Cupels? to which we anſwered before of the probe of cupels not to be ſufficient for all ſeverall metals. I need therefore ſay no more, but I refer the ſtudious Reader to *Paracelſus* his booke the *Vexation of Chymiſts*, where thou ſhalt finde another lotion and purification of metals which heretofore was unknown to Miners and dealers in minerals. As for example: A Miner finding the oar of copper, uſeth his skill delivered by the ancients to his utmoſt endeavour, whereby he may cleanſe it and reduce it to metal: where firſt he breaks it into pieces, and boils it, for to take away the ſuperfluous ſulphur, then by vertue of melting he brings it into a ſtone (ſo called) which afterward again he commits to fire, and freeth it by the addition of lead, of its gold and ſilver; which done he blacks and reddens it, turning it into copper, which is his laſt labour, whereby the copper is made malleable and vendible: which done the Chymiſt coming tries another ſeparation, by whoſe help gold and ſilver is extracted, as yet tryed of very few, of which mention is here made. *Paracelſus* alſo ſaith in the ſame place, that gold hath given ſome an eaſier way of ſeparating gold and ſilver from courſer metals, and indeed without refining the oar, which is a ſpecial and curious Art, which he teacheth not in plain tearms, but onely ſaith it is ſufficiently taught in ſeven rules of that book, where he treats of the nature and propriety of metals; in which you may ſeek it. And this purification of courſer metals I count moſt eaſie, which I have often tryed in ſmall quantity: and I doubt not but God hath ſhewn other Artizens alſo other purifications, which imperfect metals are perfected; for example, if one would purge the fruit of the earth by diſtillation, ſo that the dregs and impurities being taken away, it would grow up with a new clear clarified body: as if one diſtil black and impure Amber by a retort, the ſeparation would be made by fire, of the water ſavouring of the *Empyreum* of the oyl and volatile ſalt, and the *Caput mortuum* be left in the bottome of the retort; by which meanes, in a very ſhort time without great labour, is made a great alteration and emendation of Amber, though the oyl be black, impure, and ſtinking: but if it be again diſtilled by the retort with ſome mundifying water, as with the ſpirit of ſalt (namely through a freſh clean glaſs retort) ſhall be made a new ſeparation by that ſpirit of ſalt, and a far clearer oyle ſhall be extacted; the dregs with the ſtink left in the bottom of the retort, which afterward may be twice or thrice rectified againe with freſh ſpirit of ſalt, until it get the clearneſs of ſalt, and ſweetneſs of ſent reſembling amber and musk.

And this tranſmutation makes of a hard thing a ſoft; unlike the former in ſhape, which though never ſo ſoft and liquid, oily, may again be coagulated, ſo that it become as it was at firſt, after this manner following. Take the ſaid oyle very well clarified, adde to it new ſpirit of ſalt, yea ſalt enough for its own recoagulation, and againe it requires the hardneſs of amber, of an excellent clear and admirable colour; of which half an ounce is worth more than ſome pounds of black amber; of which ſcarſe the eight or tenth part remains in purifying, all the foul ſuperfluities caſt away.

By this means I think one may cleanſe and mend black metals, if ſo be the manner of their cleanſing were known by diſtillation, ſublimation and recoagulation. But thou ſay'ſt that metal cannot like vegetables be purified by force of diſtillation, to which I preſent our firſt furnace not given to peaſants, but Chymiſts trying metals; ſo alſo the poſſibility of their perfection is ſhown by help of fermentation. For as freſh leaven may ferment the vegetable juices, which are perfected with fermentation, the dregs being caſt away as one may ſee in wine, ale, and other liquors, whoſe laſting and perfection proceeds from no other thing but fermentation purifying the vegetable juices, without which they could not otherwiſe withſtand the Elements, ſubject to corruption in a very ſhort time, which fermented laſt ſome years: ſo alſo if we knew the proper ferment of metals, ſurely we might refine and perfect them, ſo that they would not be any more ſubject to ruſt, they would prevaile againſt fire and water, and be nouriſhed and fed by them. For ſo the world heretofore periſhed with water, and ſhall at laſt periſh with fire, and our bodies muſt rot and be purified with fire before we come to the ſight of God. And thus far of the fermentation of metals, wherewith they are refiſted and perfected. Metals alſo are pur'd and mended like milk ſet on the fire; whoſe cream the better part (the ſubſtance of butter) in the top is ſeparated from whey and cheeſe, and according to the heat of the place the ſeparation is ſpeeded: even ſo it is with the ſeparation of metals; where metals put into a fitted hot place by themſelves without any addition of another thing (for metals were before reduced to a milky ſubſtance or curd) are ſeparated in time, by parting the nobler parts from the ignobler, opening a great treaſure: and as in winter time milk is hardly ſeparated with a weak heat; juſt ſo metals if not not helped with fire, as one may ſee in iron, which in long time under the earth is turned into gold without Art. For often iron oar is found with golden veins very goodly to behold, ſevered from the courſe, earthy and crude ſulphur, by force of the centers heat. And commonly in ſuch oar no vitriol is found, ſeparated and bettered by its contrary. But a long time is required for that ſubterraneous ſeparation, which Art very ſpeedily performes; as is wont to be done with milk in winter when wee preſently make butter of it, when we put it to fire to part the cream ſpeedily; which ſeparation, precipitation made with acid things, mortifying the urinous ſalt of milk much helps; by which means all principles are ſeparated by themſelves, as butter, cheeſe, whey: ſo in a quarter of an houre ſeparation is made by boiling, which elſe without acid things could not be done in ſome weeks. If then it be poſſible in vegetables and not animals, why not in minerals? For what but gold and ſilver is found in lead, iron, tin and copper, though they doe appear? Why is all goodneſs denyed to courſer metals, granted to vegetables and animals not equal to them for laſting? Whence is the naturall perfection of lead, tin, iron, and copper to be proved? Nature ever ſeeks the perfection of her fruits; But courſe metals are imperfect; Why then is not nature helped with Art in perfecting them? But the bond of metallick parts is worth obſervation, which being broken, the parts are ſeparated. Urinous ſalt (as I may ſay) is the bond of the parts making milk, as of butter, whey, and cheeſe, which is to be mortified by its contrary acid for ſeparation. But in iron the parts are bound with vitriol ſalt, as with a bond, which is to be mortified with its contrary, urinous or nitrous ſalt for ſeparation. He therefore who knoweth to take away the ſuperfluous ſalt of iron, either by moiſt or dry means, doubtleſs ſhall have iron not ſoon ſubject to ruſt.

Fire alſo hath incredible force of it ſelf in changing metals. Is not ſteel made iron by force of fire, and iron of ſteel by different proceeding? Experience dayly teacheth us alſo divers kinds of changes and refinings by fire; why is it not poſſible in metals by an expert Chymiſt having skill in them? Who would beleeve that a live bird lurkes in an egg, and an hearb having leaves, flowers, and ſent, in the ſeed? Why may not then abortive metals, getting not yet perfection, be perfected by Art, with help of fire? Is not an unripe apple or pear ripened by the heat of the Sun? which ſome curious and induſtrious marking have imitated nature in their works; and have found ſome metals not deſtroyed with the heat of fire, but enriched with a ſecret gainfull heat, ſo that melted (digeſtion being made) they have yeelded double weight of gold and ſilver. Yea I my ſelf have ſeene the common oar of lead digeſted after the aforeſaid manner, which was not only inriched with ſilver thereby, but alſo partaked of gold which it wanted before in ordinary trial. Beſides one might work this in great quantity, as with an hundred pounds; which work of minerals will without doubt bring great profit to the skilful triers of lead. But know this not every one by this tryal of lead to be furniſhed with gold, but the oar to be ever enriched with ſilver, experience being witneſs.

More ſuch things are found in Nature incredible to the ignorant, & thoſe that are unacquainted. But if we mortals were more diligent in reading the book written with the hand of God in the pages of the four Elements, ſurely we ſhould find more ſecrets and wonders in them, but skill and wealth is got with ſweat of face and not by ſloth; therefore *labour* and *pray*. Metals are alſo by help of gradation equal to germination.

For it is well known, that the ſhoot or graffe of ſome fruitful garden-tree implanted in a wood, makes after that tree to bear not wild fruits, but very good and ſweet like them of the implanted ſhoot, as one may ſee in iron diſſolved in an acid ſpirit, fermented with Venus and turned into Copper: by which means doubtleſs copper is turned into Silver, and ſilver into gold, if by manner of fermentation, the true way were known.

Now this tranſmutation is like digeſtion, making beef or horſe fleſh of graſs in the ſtomach of oxe and horſe; and mans fleſh of beef in the ſtomach of man.

The better parts alſo are ſeparated from worſer by the attractive ſtrength of the like, as is to be ſeen in metal abounding with ſulphur, to which if iron be added in fuſion, the ſulphur deſerts its native metal (by which meanes it is more pured) and joins its ſelf to iron, with which it hath more affinity and familiarity, then with its own. For example, if iron be added to lead oar ful of ſulphur in the melting, this melted metal is made malleable, which elſe would be black and brittle. And if ſomething elſe to be put to the melted malleable metal were known to us, to take away in the melting the redundant, crude combuſtible ſulphur, queſtionleſs it would yet be made purer, which thing unknowne, metals remain in their impurity. And indeed God hath done well in this as in all other his works, that he hath concealed his knowltdge to us: for if it were known to the covetous, they would buy up all lead, tin, copper and iron, to turne into gold, ſo that rurall and poor Labourers could hardly buy metallick inſtruments for their uſe, for the ſcarcity; but God will not have all metals turned into Gold.

By a given ſimilitude of taking away the ſuperfluous ſulphur of ſome metals in fuſion, for to keep the purer parts; ſo likewiſe is given, of ſeparating the purer parts from the impure, namely by the attractive power of the like, where the purer parts are drawn together by their like, the impurer and heterogeneous part is rejected: and that may be ſhown us well by a moiſt or dry way: an example of the moiſt way enſueth.

If quick Mercury be added to impure gold or ſilver diſſolved in its proper *menſtruum*, the mercury drawes with it inviſible gold and ſilver from the *Menſtruum* and mine with the refuſe, and aſſociates what is pureſt to it ſelf: which ſeparation ſoon ſucceeds. Mercury performes the ſame likewiſe a dry way: namely when ſome earth having ſome gold and ſilver is moiſtened with acid water, and they are ſo long bruiſed together, till Mercury drawes the better part; which done you muſt waſh the dead earth left, with common water, and ſeparate Mercury dryed from the attracted gold and ſilver, by trajecting them through a skin. And Mercury drawes but one metal from the earth, and indeed the beſt for one time; which ſeparated, it draws the ſecond another metal; for example, if in ſome one earth, gold, ſilver, copper and iron lye hid, the firſt time mercury draws gold, the ſecond ſilver, but copper and iron hardly for the droſs, but tin and lead eaſily, but eaſieſt of all gold for its purity like to Mercury.

Another Demonſtration by a dry way.

PUt under a tile the cuple with lead, to which adde a grain of very pure gold, moſt exactly weighed (for memories ſake) make the gold in the cuple to fulminate, and lead will enter the cuple, the gold left pale in the cuple: of which pale color there is no other cauſe then the mixture of ſilver, drawn from the lead by gold. But thou ſayeſt, that thou knoweſt this, that gold fulminated with lead, to be made paler and weightier, for ſilver in the lead, left with gold in the trial, augmenting the weight, and thence making it pale: to which I reply, though lead leave ſome ſilver in trying in the cuple, mixt with gold added to it, the weight of gold augmenting, and changing the colour; yet it is proved by weight, that lead leaves more mixt with gold in the cuple, then tryed without gold. Hence it is proved, that gold in fire draws its like from other metals, augmenting its waight: and this alſo gold doth in the moiſt way: for if it be diſſolved in its own *menſtruum*, together with copper, & put in digeſtion, it draws gold ſeparated from copper which labor though not done with profit, yet witneſſeth a poſſibility. But if the *menſtruum* of gold augmenting the attracting power of gold or multiplying the ſame were known, but diminiſhing the retentive power of copper, doubleſſe ſome gain were to be expected; & indeed more, if gold and copper together be melted in fire with the dry mineral *menſtruum*: by which means the weight of gold would be increaſed according to *Paracelſus* ſaying:

Metals mixt together in a ſtrong fire, continued a pretty while, the imperfection to vaniſh, and leave perfection in its place.

Which ſurely well done is a work not wanting gain. For I freely confeſs, that I would ſometime incorporate ſilver with iron, when as gold from iron gave me a good increaſe of pure gold, inſtead of fixt ſilver ſought after. And by this means often ſome not thought on thing happens to Artiſts, as to my ſelfe with fixt ſilver, uot rightly conſidering the buſineſs. Therefore medling with metals be ſure when you finde ſome increaſe, to weigh well what it was at firſt. For many think, long trying ſilver with iron, by the Bloud-ſtone, Load-ſtone, Emraud, *lapis calaminaris*, red talc, granats, antimony, arſenic, ſulphur, flints, &c. having mature and crude, volatil fixt gold in them, finding in the trying good gold; that this gold is made of ſilver by help and uſe of the foreſaid minerals; it is falſe. For ſilver drew that gold out of thoſe minerals, in which before it lurked volatile. Yet I deny not the poſſibility of changing ſilver, as being inwardly very like gold, but not by help of cementation with the ſaid minerals, becauſe that gold proceeds not from ſilver but thoſe minerals, attracted by ſilver. This labour is compared to ſeed caſt into good ground, where dying by its owne power it draws the like to it ſelfe, when it is multiplyed an hundred fold.

And it behoveth in this work now and then to wet the metallick earth, with their proper metallick waters, dryed with heat (which operation is called of the Philoſophers inſeration) elſe the earth will be barren, and it behoveth that this water be neer in kind to earth, ſo that when they are united they yeeld a certain fatneſs. For as it appears from ſandy, dry earth moiſtened with rain water, not bringing forth fruit agreeable to its ſeed, for the ſmall heat alſo of the Sun conſuming the moiſture, and burning the ſeed in the earth, which mixt with cows dung or other, keeps the water ſo as that it cannot be ſoon conſumed. By the ſame reaſon it is neceſſary that thy earth and water be mixt, leſt thy ſeed be burnt up. Which work if well handled, it wil not be in vain, requiring

the

exceeding diligence of nouriſhing the earth with warmth and moiſture when the earth is drown'd with too much moiſture, and with too little it cannot increaſe, and this is one of the beſt labours, with which I draw forth good gold and ſilver of baſer metals, requiring the beſt veſſels, retaining ſeed together with their earth, and water in its proper heat. I doubt not but this work alſo in a greater quantity, may be performed, firmly beleiving that the courſer metals eſpecially lead, the fitteſt of all not only to be perfected into gold and ſilver, but alſo into good medicine: which without queſtion is the Philoſophers labour granted from God, as a great comfort to the Chymiſt, but warily to be uſed. For that all and ſingular Gods gifts he will not have common; as indeed I have found to be an inventer of a very excellent work, that I ſhewing it to a friend, neither could I afterwards teach it to him, nor doe it again for my ſelf. Therefore and indeed juſtly men are doubtfull in writing matters: for many ſeek not at pleaſure to detract the inventions of others performed with great coſts and labour. Therefore it is ſafer to be ſilent and to give leave to ſeek, then to publiſh, ſecrets, that they may undergoe the paines and charges to be born in inventing high matters; nor any more hereafter may the ingrateful ſo impudently gape after others Labours. Therefore I would entreat all men both of high and low degree that they would not moleſt and tire me hereafter with their petitions and Epiſtles, and that they would not turn my good will of benefiting others to the ruine of my ſelfe, contented with my writings publiſhed with the profit of my neighbour. Nor doe you think that I poſſeſs and promiſe golden mountaines. For what I have written I have writ to diſcover nature, in theſe diſcourſes of the perfection of courſe metals in ſmall quantity, For I never made triall in a great quantity, trying truth and poſſibility in a leſſer only, in ſmall crucibles: therefore thoſe things which I have writ are written to that end that the poſſibility of the Art may appear, of perfect metals to be wrought out of imperfect, therefore hee who hath occaſion may make triall in a greater quantity: but as for my part wanting opportunity; I expect Gods bleſſing, whereby upon occaſion I may make tryall in a greater quantity, and ſo receive the fruit of my labour and great charges.

Alſo metallick bodies are tranſmuted by another means, namely by that benefit of a tinging metallick ſpirit, as one may ſee in *aurum fulminans*, ſometimes kindled upon a ſmooth clean metallick plate, fixing a very deep gold tincture upon the plate, ſo that it may bear the touch-ſtone. The ſame alſo happens in a moiſt way, where plated metals put on a gradatory ſpirit made of nitre and certain minerals, pierc't by the ſpirit obtain another kinde agreeing to the ſpirit. But if one doubt of the metallick gradation, made with *aurum fulminans*, he ſhall try the certainty from the often fireing of freſh *aurum fulminans*, upon the ſame plate, for he ſhall ſee that it is not the colour of the metal, and outwardly gilded but deeply tinged. Likewiſe one may try the certainty by a humid ſpirit, if transformed metals are tryed, whence the mutual action and paſſion of ſubtilized ſpirits plainly appeares, for the power of ſpirits is very great, and incredible to one not exerciſed: and this gradation of inferiour metals Philoſophers both ancient and modern, doe not onely confirm, but alſo diggers of minerals taught by experience; that mineral vapours by penetration change courſer and to purer metals, *Lazarus Ercker* being witneſs, that Iron is changed into a good natural copper in green ſalt waters; and that he ſaw a pit, in which iron nailes and other things caſt in, by the penetration of a cupreous ſpirit were turned into a good copper. I do not deny that metallick diſſolutions of ſome metals do ſtick precipitated to the plates and to make them of a golden, ſilver, or cupreous colour; for it is wel known, that iron caſt into a vitriol water not to be turned into copper, but to draw copper out of the water, of which thing we treat not here, confirming the poſſibility of metallick tranſmutations by a tinging and piercing ſpirit; therefore I againe maintain that great power is in metallick ſpirits; look only upon courſe and opake earth, and beſides that clear and limpid water with which the clearer and more powerfull air proceeding from the water cometh from the earth. Are not whole countries drowned with water ſometimes, Towns and Cities taken away? cannot the aire deſtroy the ſtrongeſt houſes; eſpecially ſhut up in the earth ſhake the land for ſome miles; and after ward demoliſh whole cities and mountaines with the death of men? all which things are done naturally. Wind artificially raiſed by Nitre threatens a far greater danger, which no man can deny. Although that corporeal Elements exerciſe ſo great power, yet they cannot pierce metals without hurt, nor ſtones and glaſs, and things ſoon penetrated by fire. Therefore not by an occult but a manifeſt power of Sun and fire, which it hath over metals, ſtones and glaſs, which are eaſily pierc't by them without any impediment: and why ſhould not metals compact of a certain metallick ſubtile and piercing ſpirit be penetrated by help of fire, and changed into another ſpecies? As is already ſpoken of *Aurum fulminans* and *aqua gradatoria*. Therefore there is no doubt of the poſſibility of the metallick tingent ſpirit changing courſer metals into finer both by a dry and moiſt way; For metals may be purified the ſame way that Tartar and Vitriol and other ſalts, namely by the benefit of much water. For it is manifeſt that vitriol is purged with iron and copper mixt with it, namely diſſolved and coagulated in much water, ſo that it waxe as white as allum; which purification is but a ſeparation of metal from ſalt, made by benefit of much water debilitating ſalt, ſo that it cannot longer return mixt metal, which is precipitated like ſome ſlime, not unprofitable, becauſe the chiefeſt part of vitriol, from which is the greenneſſe, *viz*, Copper, Iron, and Sulphur. And as by help of ſeparation metals are drawn from vitriol, more perfect then ſalts; ſo alſo to be taken from metals with the perfecter and better part is ſeparated by help of precipitation: as for Tartar it is purified by the addition of water, but its better part is not precipitated as in vitriol, but the courſer part by reaſon of blackneſs and fæculency. As for example: Tartar by the often ſolution of the vulgar (made with a ſufficient quantity of water) and coagulation made very pure and white, becauſe in every ſolution made with freſh clear water, it alwayes becomes purer, and not only by this means white Tartar, but alſo red and feculent, is reduced into tranſparent cryſtals, and indeed very ſpeedily by vertue of a certain precipitation; whoſe limoſity, for obſcuration ſake of the ſalt of cryſtalline Tartar, is nothing elſe but an unſavory thing, dead and uſeleſs, mixt with Tartar in its coagulation in Hogs-heads of wine, and ſeparated again by power of ſolution.

And theſe are the examples of the two ſalts of Vitriol and Tartar, not in vain ſet down, becauſe they ſhew the difference in precipitation: for in ſome metals by force of precipitation the courſer part is ſeparated; but in other the better and choicer according to the prevalency of this or that part.

In vitriol, the better part (copper and iron) is the leaſt, which is precipitated and ſeparated from the courſer and greater part, *viz.* ſalt. But in Tartar the courſer and leſs part is precipitated and ſeparated from the greater and better part clarified: the like is in metals. Therefore let every one be wary in ſeparating, and conſider before, whether the better or courſer part of metal is to be precipitated, without which knowledge no man can meddle with this buſineſs, let alſo the workman be ware who expects any profit from his labour of corroſive waters, as *Aqua fortis*, *Aqua Regia*, ſpirit of ſalt, vitriol, allome, vineger, &c. in the ſolution from which no good proceeds, as utterly deſtroying and corrupting all and each of them; proving the ſame in theſe words, *From Metals, by Metals and with Metals metals are made perfect*, metals are alſo purified, matured and ſeparated from their vitioſioties by Nitre burning up the ſuperfluous ſulphur.

And all the aforeſaid perfections of metals are but particular. For every particular medicine, as well humane, as metallick, purgeth, ſeparateth and perfecteth or amendeth by the taking away the ſuperfluity. For univerſal medicine worketh its perfections and emendations, by ſtrengthening and multiplying the radicall moiſture as well of animals as metals, expelling then by its own natural vertue his enemy. But thou ſayſt excellent examples indeed are delivered by me, but not the manner of doing them. *R.* I have delivered more then you think, although you don't perceive it: for I am ſure after my death that my books will be in greater eſteem, from which it will appear that I have not ſought vain glory, but the profit of my neighbour to the utmoſt of my power. But doe not ſeeing my freeneſs of writing think that you may wreſt many things from me. For aſſure your ſelf that although I have written many things for the publick good, yet I intend not by this means to trouble my ſelf. For I cannot ſatisfie the deſires of all men, nor anſwer their Epiſtles, nor inrich all men, who neither am rich my ſelf nor have ſought riches. For although I have gotten the knowledge of theſe things by Gods bleſſing, and have tryed the truth of it in ſmall quantity, yet have I never made experience in great ſtore for wealth ſake, contented with Gods bleſſing. Therefore I would advice all illuminated by God, that they fall not into this ſinne of ingratitude; but that they be mindful of the poore, as in thankfulneſs to God, as hoping to eſcape eternal damnation. Nor let the envy of the malitious move thee famous for knowledge by divine favour, for the covetous and ambitious wiſh well to none but to themſelves; who ought to conſider, that as they brought nothing with them, ſo alſo they ſhall carry away nothing. Be thou onely a good husband in the gift from God intruſted to thee, and do thou juſtice undauntedly.

And let this ſuffice of the ſeveral purifications of metals according to my experience, as for that univerſal medicine ſo famous, I cannot judge of it being a thing unknown to me; but the poſſibility thereof I am forc't to affirm, moved with the ſeveral tranſmutations of metals; which unknown it behoves us to be contented with that favour which God hath beſtowed on us. For oftentimes queſtionleſs it is better to know little, for Eternal Salvations ſake; for moſt commonly wealth and learning puffe up. And pride brings to the Devil the author of it, from whence God of his mercy preſerve us.

Of the Philoſophers Stone.

THe Univerſal Medicine is beleived from many ages, by many very famous men, Jews, Ethnicks, and Chriſtians, to bring men and metals to the higheſt degree of perfection, and the poſſibility thereof by Art; nor is only beleived, but alſo proved by many ſure reaſons, for which thing numberleſſe writings of divers tongues are true and falſe: there is no need to adde any thing of my ſelf; altogether ignorant of this thing: although I have ſome times heard, how many times in divers places pure fine gold is made of courſer metals, eſpecially of lead, prepared by ſome medicine artificially: yet I have left this kinde of diſcourſe in its worth, never yet reſolved to undertake ſuch a buſineſs, ſcared with the example of other men as well of high as low degree, learned and unlearned looſing their labour and charges in this Art; but I am rather perſwaded that ſuch a wondeful univerſal medicine cannot be found in the world. And though I have often ſeen wonders in my labours giving occaſion, yet I never durſt try wanting the opportunities of time and place; until at length a belief of the poſſibility comes into my hands, ſeeking ſomething elſe of no great moment. For I have undergone much charge and labour for many years to extract the tincture of ſalt of gold, for a medicine made therewith, which at length I have obtained, where I have obſerved the remainder of the gold, the ſoul or better part being extracted to be no more gold, nor longer to endure fire. Whence I conjectured, that ſuch like extraction being fixt again, can perfect courſer metals and turn them to gold: But I could not hitherto try the truth of my conceived opinion, living at this time in a forraign place; therefore againſt my will, although greedy of novelty, I have been forc't to abſtain from the work. In the mean time conſidering the opinions of Philoſophers concerning their gold, not the vulgar, aſſerting the univerſall medicine to be prepared therewith. I have again affuſed ſome Philoſophical Vineger to the Copper for to extract the tincture, where almoſt all Copper like whitiſh earth is ſeparated from the tincture in digeſtion, which earth by no Art I could againe reduce into a metallick body.

Which experiment again confirmed me of the poſſibility of this Medicine. Which labour though I never followed, yet I doubt not but it is humane medicine, thought not alſo metallick, attainable thence by a diligent workman. The ſoul therefore with all the metallick attributes, conſiſting in ſo ſmall a quantity, which is ſcarſe the hundredth part of the weight, which extracted and ſeparated the remaining body is no more metal but a uſeleſs and dead earth; not to be doubted but fixt againe may reaſſume and perfect another metallick body. Therefore I am confident perſwaded with the aforeſaid reaſons, that ſuch a medicine is to be made of mineral and metallick things, *viz.* in the flowing, changing baſer metals into better. But doe not think that I writing theſe things make gold or copper the matter of this medicine; which I doe not hold, well knowing that there are other ſubjects eaſily to be handled, abounding with tinctures.

Which medicine though rare and hardly can be obtained, yet Art and Nature are not to be blamed therefore, but we rather ſlothful, covetous, proud and impious: for no wicked man is worthy this Art, or a deſpiſer of God and his Word, and an ambitious hater of his neighbour. Thou'lt ſay this is a work of Nature and Art, not therefore to be attributed to our life, heretofore given to Ethnicks, not to be compared to us for piety, as not having the true knowledge of God. Therefore my life (though wicked) cannot hinder me: becauſe this Art conſiſts in the knowledge of naturall things. I anſwer, O pretty fellow! thou art quite miſtaken; doſt thou think that the Ethnick Philoſophers did not know the true God? They had greater knowledge of God then thou; to whom although Chriſt was not preacht, yet they knew from Nature; and according to the rule of this knowledge they led their lives, obtaining this profit from God, that they put it not to ill uſe but to the profit of their neighbour. But thou then perſwadeſt thy ſelf to excel thy neighbour in learning, whoſe mote thou ſeeſt, knowing not the beam in thine eye, ſpending thy life in covetouſneſs, pride, envy, hatred and other ſinful pleaſures, doſt thou ſo think thy ſelf hid from the ſight of God that he cannot hinder thy endeavours? Truly ſo great a gift is not given of God to covetous and proud falſe Chriſtians. Therefore every one muſt ſpecially examine himſelfe undertaking this work, whether he come with waſht or polluted hands. For it is very certain and true, that never a wicked man though running ſhall obtain this profit, which is of God alone, not of man.

So thou haſt heard now my opinion of the Univerſall Medicine, which my experience in Gold, Copper, and other Minerals, and metals hath cauſed: which I will not preach for *Goſpel*, becauſe it is humane to erre.

Therefore no certainty is to be had, before its final and compleat perfection, and indeed once or twice tryed for certainties ſake. For it is not lawful to try often an excellent way once found out, which happens doubtleſs as well to others as to me. Therefore we muſt not triumph before the victory for unthought on impediments fruſtrating hope; but God is rather to be implored in our labours, that he would be pleaſed to bleſs our endeavours, that we may uſe well his gifts in this life as good ſtewards and afterward beſtow the free reward of our labours, watchings and cares on us ſinners, namely everlaſting reſt and ſalvation out of his meer mercy.

Whether minerals, As Antimony, Arſenic, Orpin, Cobolt, Zinck Sulphur,&c. *may be tranſmuted into metals, and into what?*

IT is long ſince debated among Chymiſts, whether the aforeſaid minerals proceed from the ſame principles with metals, and whether to be counted metals; in which controverſie they have not agreed to this day, when as one approves this which another denyes, ſo that a ſtudent of Chymiſtry knows not to what ſide he had beſt aſſent.

But this knowledge not a little concerning the purifying of metals I would put my opinion alſo grounded upon experience, for the ſatisfying the doubtful, the ſimplicity of them is ſtrange who hold not one and the ſame beginning to be of minerals and metals, but if metals might be made by nature, ſurely it had long ſince been done; but it never was, experience witneſſing, for permanent minerals are never tranſplanted into metals. I Anſwer, metals grow one way, alſo vegetables another, ſoon budding and again ſoon dying; but it is not ſo with metals, for all laſting things have long time of digeſtion; according to the ſaying, *That which is ſoon made doth ſoon fade*, this is to be underſtood not only of vegetables and minerals, but alſo of animals, as appears from that budding of ſome vegetables, coming in ſix moneths ſpace to their perfection and then again iron periſhing: when as things requiring longer time of digeſtion and perfection are much more laſting. A Muſhroom in the ſpace of one or two nights grows out of rotten wood, again ſoon vaniſhing: not ſo the Oke. Oxen, and horſes in the ſpace of two or three yeer come to perfection, ſcarce living the twentieth or the twenty fourth yeer: but a man requiring twenty four yeers to his perfection, lives ſixty, eighty, or a hundred yeers. So alſo we muſt conceive of laſting metals requiring many ages, and alſo very long times of digeſtions and perfections; metals therefore requiring very long times of digeſtions to their perfection, it is granted to no man ever to ſee the beginning, and end of them, the tranſplantation of minerals into metals by nature cannot be divided; eſpecially becauſe that in the oares of metals, eſpecially of courſe ones, minerals are alſo found; wherefore diggers of minerals, when they finde them, conceive good hopes of finding metals, of which they are termed the *Coverlids*, for ſeldome metals are found without minerals, or minerals without metals; nor alſo are ever minerals found wanting gold or ſilver; therefore minerals are properly termed *Embryon metals*, becauſe by art and fire a good part of gold and ſilver is drawn out of them by fuſion; which if they do not proceed from the metallick root, whence proceeds that gold and ſilver? for an Oxe is not born of an infant, nor man of a Calf; for alwayes like is produced of its like.

Therefore minerals are counted but unripe fruits in reſpect of metals, not yet obtaining their ripeneſs and perfection, nor ſeparated from the ſuperfluous earth; for how ſhould a bird be hatcht of an egg by heat, not predeſtined for the generation of the bird? for ſo we muſt underſtand of minerals, which if they be deprived of their metallick nature, how ſhould by fire metals be produced from thence? But thou ſaiſt that thou never ſaweſt the production of perfect metals out of courſer, therefore that it is neither likely, nor credible to thee to whom many things as yet lie hid from moſt men, perverſly and fooliſhly denying things unknown: for daily experience witneſſeth, that the viler minerals and metals by taking away the ſuperfluous ſulphur (however it be done) to obtaine a greater degree of perfection, therefore ſhould not thy heart believe, and thy tongue ſpeak what thou ſeeſt with thine eyes? for experience ſhews that good gold and ſilver might be drawn out by art almoſt out of all courſe minerals and metals, yet more out of ſome then of others and ſpeedier; for there is not that dark night, that is altogether deprived of light, which may not not be manifeſted by a hollow glaſs; nor is there an element (though never ſo pure) not mixt with other elements, nor any malignity deprived of all good, or on the contrary. And as it is poſſible to gather the hidden beams of the Sun in the aire, ſo alſo hidden perfect metals diſperſed in imperfect, and minerals by fire, and an expert Artiſt;if once they are placed in fire with their proper ſolvents where the homogeneous parts are gathered, and the heterogeneous ſeparated,ſo that there is no need to go into the Indies to ſeek gold and ſilver in thoſe new Iſlands which is poſſible to finde plentifully here in Germany, if ſo be the merciful God would pleaſe to turn away thoſe preſent cruel plagues, and bring them out of old metals,*viz.*Lead,Iron,Tin and Copper, there left by the dealers in minerals; indeed without the huſbanding of metals. Let no man therefore judge himſef to be poor,becauſe he is only poor and in want(although otherwiſe very rich and abounding in wealth, which yet in a moment he is forc't to forſake)that being ungrateful,neither knoweth nor acknowledgeth God in his works.

What I pray is in leſs eſteem in the world then old Iron and Lead? which are acceptable to the wiſe to uſe in the Lotion of Copper and Tin with the mineral white. But how they are to be waſhed, is a difficulty to the unexerciſed in the fire, and ſhall be delivered by ſimilitudes: You ſee Antimony freſh digged out of the earth very black and impure; which by fuſion ſeparated from its ſuperfluity (which though nature gave to it not in vain, but as a help to its purification, according to that: *God and Nature do nothing in vaine*) is made more pure and endowed with a body neerer to metals then its mineral,which if afterwards caſt with ſalt of Tartar, the crude and combuſtible ſulphur is mortified thereby, and is turned into droſs ſeparated from the pure mercurial part, ſo that hereby is made a new and freſh ſeparation of the parts, of which one portion white and brittle ſinks to the bottome, the other lighter, to wit, the combuſtible ſulphur is on the top with ſalt of Tartar; which powred out into a Cone, when they are cold, may be ſeparated with a hammer; the inferior part of which is called by the Chymiſts *Regulus*, which is purer then Antimony caſt the firſt time out of its mineral, and this is the uſual purging of Antimony uſed by Chymiſts,to which (*Regulus*) if afterward any thing ſhould be added, for a third purification, without doubt it would not only be made purer but more fixt and malleable. For if white *Regulus* be preparable out of black Antimony, why not as well malleable metal out of the *Regulus*?

Another away of ſeparating the ſuperfluous Antimonial ſulphur.

℞ Antimony powdred one part, ſalt petre half as much, mingle them, and kindle the mixture with a live coal, and let that Antimonial ſulphur with the nitre be burnt up, the darkiſh maſs being left, to wit, of a brown colour, which melted for the ſpace of an hour in a ſtrong fire yeilds an Antimony like to that which is made with ſalt of Tartar, but ſomewhat leſs in quantity, like to theſe the parts of animals are ſeparated, *viz.* if Antimony, nitre and crude Tartar be mingled in an equal weight, and they being mixt are kindled and melted. There is alſo another ſeparation of Antimonial parts; when of ſmal bits of Iron one part is put into a ſtrong crucible, in a winde furnace, to which being red hot, caſt two parts of ground Antimony, for fuſion, and the ſuperfluous combuſtible ſulphur will forſake the Antimony, and joyn to the iron a metal more amicable to it then ſulphureous; mixt with which forſaketh its own proper pure Mercury and ſulphur or *Regulus*, which is almoſt the half part of the Antimony.

And theſe four wayes, by which the ſuperfluous combuſtible ſulphur of Antimony is ſeparated are moſt common, not ſet down as ſecrets, but for demonſtrations ſake, that it may appeare how ſulphureous minerals are to be perfected and purified, which are little amended, yet ſhewing a better way not only for Antimony; but alſo for Arſenick and Orpin, although theſe two cannot be ſo done with iron, nitre and tartar by reaſon of theit volatility, but with oyle or other fat things in cloſe crucibles, giving a *Regulus* like to the Antimonial, And theſe *Reguli* make tin hard, to ſound and be compact, if to one pound one ounce be added in fuſion, for making good houſhold ſtuffe. And in tryal they give good Gold.

And as it is ſaid of purging Antimony,ſo alſo it is to be underſtood of the reſt, as *Wiſmuth, Zinck, lapis calaminaris*, lead, tin, iron and copper to be purged from their ſuperfluous ſulphur,if thou wilt draw more perfect metals,*viz.* gold and ſilver out of them with gaine. And ſo I make an end of metallick lotions, recommending to Chymiſts, *nitre, tartar,flints*, and *lead*; for who knoweth to uſe them, ſhall not loſe his labor in Chymiſtry; but tis to be lamented, that every where good earth and fixt in the fire is not to be gotten, retaining lead and ſalts; for without our old lead little or nothing can be done in the refining metals; therefore who goes to try any thing in this art, let him ſeek the beſt earth retaining lead twenty four hours ſpace; afterward let him conſult with tin, what Vulcan has to be done with iron; who will tell him what he muſt ſuffer, before he obtain the Crown.

Of the tincture of Sol and Antimony.

SOmetimes another alteration happens to mans body from the attraction of mineral vapors (which cannot be done by my furnace) in the tryal, therefore here I will ſet down a certain medicine for the workmans ſake, as well for preſerving as curing, namely a cleer rubin fixt and ſoluble of gold and Antimony. Take of pure gold half an ounce, diſſolve it in *Aqua Regia*, precipitate the ſolution with liquor of flints, as before ſaid in the ſecond part, edulcorate and dry the calx, and it wil be prepared,take *Regulus Martis*(of which is ſpoken a little before) beaten fine, to which mixe three parts of the pureſt nitre: place the mixture in the crucible between burning coales, putting to fire by degrees: which done make a ſtronger, *viz.* for fuſion, for then the maſs will be made purple; which taken forth and cooled bake very ſmal, of which take three or four parts and mixe with one part of the aforeſaid golden calx; place it mixed in a ſtrong crucible covered over in the aforeſaid winde furnace, and make the maſs to flow together like metal, and it will aſſume that Antimonial nitre in the fuſion. and it will diſſolve gold or the calx of gold, and a maſs of an Amethyſt colour will be made therewith; which ſo long leaveth the fire, till it get the cleerneſs of a Rubie, which one may try with a clean wier of iron bowed and put therein, although in the mean time the maſs deprived of fuſibility is thickened, it is meet to add ſome nitre or tartar, for ſpeeding fuſion, and that as often as ſhall be needful. Laſtly pour the maſs when it ſhall come to the utmoſt redneſs of a rubie, hot into a clean copper morter, which there leave until it coole, and it will be in colour very like to an Oriential Rubie; then bruiſe it hot into powder, alſo taking aire it would melt, and extract the tincture by the fuſion of the ſpirit of wine in a vial; and the gold together with the Antimony will remaine very white like the fineſt talc, to be waſhed with cleer water, in a glaſs edulcorated and dryed, which melted with a ſtronger fire,gives a green glaſs,in which no gold appears, yet ſeparable by way of precipitation with the filings of iron and copper, from which it recovers its ancient colour, but without profit by reaſon of the waſt, the tinged ſpirit is to be taken away from the tincture, which is a very ſoveraigne medicine in many grievous diſeaſes.

Although thou maiſt ſuſpect this not to be the ſimple tincture of *Sol*, but of nitre and tartar mixt, be ſure that the quantity of nitre added not to exceed; & ſuppoſe that tincture of Tartar and nitre, I pray what waſte is there? ſince that is ſo good a medicine by it ſelf,and I am perſwaded,this tincture of *Sol* to be better then thoſe ſet down in the ſecond part. That Ruby may be ſo uſed by it ſelf with the proper vehicles, ſeeing it is a ſoveraigne medicine of it ſelf; or elſe expoſed to the aire and reſolved to a liquor, for the medicine is not leſs then its tincture becauſe gold in it ſelf and the purer part of Antimony are made potable without corroſives. Wonderful is the power of ſalts in metals to be deſtroyed, perfected and changed by fuſion: for it happened to me one time making this Ruby,placing two other crucibles alſo with metals, by this containing gold with the prepared *Regulus* of Antimony (for eaſily two or three, or more crucibles may be placed in this furnace, to be ruled with one fire which cannot be done in a common ſurnace by that means) about to put in a certain ſalt in the crucible next to the crucible of gold, that by a miſtake I caſt it into the crucible with gold onely, whence ſo great a conflict aroſe, that there was danger of boyling over; therefore forced to remove it out of the furnace preſently with tongs and to effuſe it, ſuppoſing that the Ruby was loſt by my raſh putting in of ſalt, therefore I would only keep the gold. And I found the effuſed maſs red like blood, purer then a ruby but no gold, but white graines like lead diſperſed here and there in the ſalts, ſeparable for the ſmalneſs, not by the ſolution of ſalts which ſeparated by the ſolution of water with red tincture like blood, remained in the bottome of the glaſs, which afterward for fuſions ſake together I placed in a new crucible in that furnace, but willing to try the fuſion I found the crucible empty, and all the gold vaniſhed, a little excepted ſticking on the top to the crucible and the cover, which I took away and melted for experience ſake in a new cloſe crucible, but all of it preſently feeling heat flew away, no ſigne being left in the crucible like Arſenick; And ſo I was deprived of my gold.

At length I took the red ſolution and took the water from the ſalts, and I found the red ſalt like blood, which I put in a clear crucible in the furnace for to try whether any metallick body might thence be extracted; but I found the effuſed ſalt deprived of all tincture and redneſs: which ſeems ſtrange to me even to this day, that by help of this ſalt the whole ſubſtance of gold, *viz.* the tincture together with the remainder flew away, having ſo great volatility.

Which labor afterward I would reiterate, but it happened not ſo at all as at the firſt time; there was indeed ſome alteration of gold made, but its volatilization was not ſo great, the cauſe of which thing, I think was the ignorance of the weight of the aforeſaid ſalt, caſt in at the firſt time againſt my will.

And two reaſons chiefly moved me to inſert this hiſtory, firſt that it may appear how ſoon one may miſtake in a ſmal thing fruſtrating the whole proceſs. Secondly, that the truth of

Philoſophers may appear writing that gold by art is reducible into a lower degree, equal to lead (which happened to me in this work) and that it is harder to deſtroy gold and make it like to an imperfect metal, then to tranſmute imperfect metal to gold; therefore I am glad in my heart that I ſaw ſuch experiment; of which thing our phantaſtick Philoſophers will hear nothing, writing whole volumes againſt truth, ſtifly affirming, gold to be incorruptible, which is an arrant lye; for I can ſhew the contrary (if need be) many wayes. I wonder indeed what moves ſuch men to ſlight a thing unknown, I do not uſe to judge things unknown to me.

How dare they deny the tranſmutation of metals, knowing not to uſe coales and tongs? truly I confeſs thoſe rude and circumforaneous Mountebanks, not a little to defile and diſgrace true Chymiſtry, every where ſurprizing men by their fraude, needy and oppreſt with penury unleſs peradventure they finde ſome credulous rich man giving them food and raiment for the conceived hope of gain and skil, of which alſo ſome covetous men furniſht with gold, go clad like painted Parrots, whom I judge to be hated worſe then a dogg or a ſnake; but harmleſs Chymiſtry is not therefore to be deſpiſed. Some covetous men beſotted with folly and madneſs, laying out their moneys with an uncertain hope of gain, who afterward the thing ill ſucceeding, are forced to live in poverty, whoſe caſe is not to be pityed laying out of covetouſneſs, ſome ſeek wealth not out of covetouſneſs, but rather that they may have wherewith to live, and may ſearch nature, which are to be excuſed if they are deceived of knaves, yet not to be praiſed if they ſpend above their ability.

Another tincture and medicine of gold.

DIſſolve gold in *Aqua Regia*, precipitate it diſſolved in liquor of the ſalt of flints, powre ſome part of the aforeſaid liquor to the precipitated gold, then place them in ſand to boyle for ſome hours ſpace, and that liquor of flints ſhall extract the tincture of gold, and ſhall be dyed with a purple colour;to which powre in rain water,and make it to boyle together with that purple liquor,and the flint ſhall be precipitated, the tincture of an excellent colour with ſalt of Tartar left; out of which it is neceſſary to extract water even to drought, and a very fine ſalt of a purple colour will remaine in the bottome of the glaſs, out of which with the ſpirit of wine may be drawn in a tincture as red as blood, little inferior in ſtrength to potable gold; for many things lye hid in this purple ſalt, of which more things might be ſpoken if occaſion permitted; therefore let it ſuffice to ſhew the way of deſtroying gold, for that golden ſalt can in a very ſhort time, *viz.* an houre, be perfected with ſmall labor and tranſmuted into miracle of nature; confuting the ſlanders of the noble art of Alchimy; for which gift we ought to give immortal thanks to immortal God.

Of looking glaſſe.

I Have made mention in the treatiſe of potable gold, not only of the material heat of fire, but alſo of turning the fineſt beams of the Sun into a material bodily ſubſtance, by help of certain inſtruments by which they are gathered.I have alſo mentioned there the preparation of the hollow glaſs; I will here give it being not known to all men, the beſt that I know as followeth. Firſt patternes are to be made of the beſt mold, namely haire and clay, of which thing in the fifth part, conformable to the glaſſes in form and figure circularly round;for elſe they cannot gather the Sun beams together and againe put them forth; the fault of which thing is to be aſcribed only to the pattern, for the fuſion and poliſhing of glaſſes is not an excellent art known even to bel-founders, but to melt them very well ſhap't of the beſt matter and rightly to poliſh them this is art: and firſt to cut the patternes round very well ſhaped by uſe of a ſharp inſtrument cannot briefly be demonſtrated;therefore I wil ſend the Reader to Authors prolixly handling this thing,*viz. Archimedes* & *Johan. Baptiſt. Porta*, and others, though thou wanteſt thoſe Authors, or doſt not underſtand them, ſee thou have a globe exactly turned for making patternes as followeth; and firſt make a mixture of meale and ſifted aſhes, which ſpread equally between two boards as the manner is to ſpread paſte made of meale and butter for pyes and Tarts, anſwering in thickneſs to the glaſs to be ſhaped, then put on a compaſs and make a meaſure as you pleaſe, which cut with a knife, and put it on a globe, and ſprinkle quick lime on it out of a ſearce or ſive, and put clay well prepared with haire of the thickneſs of two fingers breadth: although it be a great piece you muſt lay acroſs wires ſtrengthning the pattern, leſt it be bent or broken. Afterward one part hardened with the heate of the Sun or fire, take away all that from the round, and put it on ſome hollow, on which it may on all ſides ſtand well, and alſo ſprinkle quick lime on the aſhes of coals on the other ſide, and put upon this the other part of the pattern, and again expoſe it by degrees to be dryed by the heat of Sun or fire, leſt it crack, which done take away the ends making thoſe parts of type or patterne from that inward or middle, which ends ſet one againſt another to the inward parts the diſtance at leaſt of a ſpan, and put between in the top a few live coales to harden the type all over, to which put on other coales, and then more, and ſo by degrees even to the top, that they may be wel kindled in their lighter parts. Although the types are very thick one fire will not ſuffice, and it will be neceſſary to add more coales, untill they be throughly kindled in the inner parts: afterward let the fire be kindled by degrees that the types may grow cold, but not altogether, but ſo that you may touch them: and preſently beſmeare finely the ſifted aſhes mixt with water with a pencil to ſtop up the chincks ariſen for burning the haire and ſmoothing the types, then again make both parts (after thou haſt framed the firſt hole in them for a Tunnel) clean by being wary leſt any foul thing fall upon them, and carefully binde them with iron or copper wier; and very wel lute over the joining with clay prepared with haire; and put on an earthy tunnel, and the type on the top of dry ſand: And thou oughteſt in the mean while thou burneſt and prepareſt the type to melt the metallick mixture, that it may be powred on the hot type, the metal well melted put on a ſear-cloth, which burning powre out melted metal into the burning type, being wary leſt coales or ſome other thing fall into the crucible, and be powred with the metal into the type ſpoiling the glaſs; then let the glaſs cool of it ſelf in the type, if the matter be not mouldred in the cooling. And though it do moulder in the cooling, which indeed would be leſſened, it behooves that the caſt glaſs be preſently taken out of the type, and covered over with a hot earthen or iron veſſel that it may coole under it, which otherwiſe cooling ſhut up in the type not able to moulder, is broke in pieces, but ſoone after you ſhall perceive, what be thoſe mouldering metals.

And this is the common way (and the beſt) of melting, if ſo be thou art exerciſed; there are alſo other wayes; firſt when types are made of wood or lead, agreeing to the glaſs to be printed the ſand, in the fineſt powder of tyles or other earth as is the cuſtome of copper ſmiths; and this way only ſerveth for leſſer glaſſes.

The third way beſt of all, but hardeſt to one not exerciſed, is as followes, make a waxen type with a cylinder to be placed between two boards as is aforeſaid of the firſt way, which put upon the globe for to ſhape it, and let it be hardned in the cold: then take it away, and ſpread the following mixture with a pencil; which ſee that it be dryed in the ſhadow, then apply the clay prepared with haire the thickneſs of one or two fingers broad: then take away the waxe from the earthen type, make a round hole in the earthen type with a knife coming even to the wax, which done, place neer that coale fire the type bending down, and the melted waxe will run through the hole, into which powre hot (not burnt) metal, &c. that liniment which is anoynted on the waxe muſt be very wel prepared leſt while the wax melt, it fall and melt away with the wax, nor let the waxe pierce the earthen type and ſpoyle it. Now the liniment follows: Burn clay well waſht in an earthen furnace even till redneſs; afterward bruiſe it and take away its fineſt part with waſhing of water, ſo that thou take the fineſt duſt, which dry and again burn with a ſtrong fire: after grinde the duſt with rain water and ſalt Armoniack ſublimated, upon a ſtone, as painters uſe to make their colours, bring it to the juſt conſiſtence of a paint, and mixture will be made; ſalt Armoniack keeps that fine powder leſt it melt away with the waxe: but prepared earth makes a tender and fine fuſion.

Metallick mixture for the matter of the glaſs.

THere are diverſe of theſe mixtures of which one is alwayes better then the other, which by how much tis the harder, by ſo much the glaſs is the better; and by how much the harder the metal is, by ſo much the better it is poliſht, nor doth the hardneſs of the mixture ſuffice but its whitneſs is required: for red proceed from too much copper; becoming black from too much iron, or duskie from too much tin, doth not make the true repreſentations of things, but changeth the ſhape and colour of them: for example ſake, too much copper makes ſhapes too red, and ſo of the reſt; let therefore the metallick mixture be very white, but if burning glaſſes are made, it is no matter what colour it be of, if ſo be that the mixture be hard. I will ſet down one of the beſt, ℞. of copper plates the thinneſt beaten to pieces one part, of white Arſenick a quarter, firſt moiſten the plates with the liquor of the ſalt of Tartar, and make a bed upon a bed with plates and Arſenick powdred, by ſprinkling this on them, until the crucible be filled; to which powre to the oyle of flax as much as ſufficeth to cover the copper and Arſenick: which done put to the cover with the beſt lute, then place the crucible (the lute being dryed) in ſand, ſo that only the upper part of the cover may ſtick out and adminiſter fire by degrees, at firſt little; Secondly, ſomewhat ſtronger, till at length it be hot that all the oyle may evaporate; in the mean time the oyle ſhall prepare the copper and retaine the Arſenick and ſhall make it enter into the plates like oyle piercing dry leather: Or place the crucible upon a grate and put fire on it, which adminiſter by degrees, until the oyle evaporate in the boyling. Laſtly when it ſhall coole, break the crucible, and thou ſhalt finde the copper of diverſe colours, eſpecially if thou ſhalt take Orpin in ſtead of Arſenick, twice or thrice increaſed in bigneſs and friable.

℞ of this copper one part, and of latton two parts, melt it with a very quick fire, and firſt indeed the latton to which afterward add the friable copper; powre out the mixture melted and thou ſhalt have a very hard metal unfileable, yet not ſo brittle but like ſteele, of which diverſe things may be ſhaped ſerving in ſtead of iron and ſteele inſtruments; take of this hard metal the third part, of the beſt tin without lead one part, effuſe it and the matter of looking glaſſes will be made. This mixture is a hard white metal making the beſt looking glaſes, but if this labor ſeem tedious, take of copper three parts, of tin one part, of white Arſenick half for the matter of looking glaſſes, which are fine but brittle as well in the melting as poliſhing, therfore carefully to be handled. I muſt here ſet down a thing worthy to be obſerved, and knowen to few; falſe is the opinion of many, eſpecially of thoſe who attribute knowledge to themſelves of the proprieties of metals, in the ſecond part (of ſubtile ſpirits) mention is made of the pores of metals, for experience witneſſeth, that thoſe ſubtile ſpirits as of hartſhorn, tartar, ſoote, and ſometimes thoſe ſulphureous of ſalts and metals do evaporate through pewter veſſels, which at the firſt time no man conceives, for whoſe ſake this diſcourſe is made. Make two bals of Copper, and two of pure Tin not mixt with lead, of one and the ſame forme and quantity, the weight of which bals obſerve exactly, which done again melt the aforeſaid bals into one, and firſt the copper, to which melted add the Tin leſt much Tin evaporate in the melting; and preſently powre out the mixture melted into the type of the firſt bals, & there wil not come forth four but ſcarce three bals, the weight of the four bals reſerved; if then metals are not porous, how I pray doth that great alteration of quantity proceed? therefore know that metals are porous more or leſs, gold hath the fineſt pores, ſilver hath more, Mercury more then that, Lead more then Mercury, Copper more then Lead and Iron then copper, but tin hath moſt of all.

If we could deſtroy metals and again educe them deſtroyed from power to act, ſurely they would not be ſo porous. And as a child without correction is unfit to any goodneſs, but corrected is endued with all kinde of vertue and learning, ſo alſo we muſt underſtand of metals which left in their natural ſtate, namely drawn out of the earth without correction and emendation remaine volatile, but corrupted and regenerated are made more noble, even as our bodies deſtroyed and corrupted, at length ſhall ariſe clarified before they come into Gods ſight. Well ſaid *Paracelſus*, that if in one hour metals were deſtroyed an hundred times yet they could not be without a body, reaſſuming a new ſpecies and indeed a better, for it is rightly ſaid, *Unius corruptio, alterius generatio*; for the mortification of a ſuperfluous ſulphureous body is the regeneration of the Mercurial ſoul, for without deſtruction of metals perfection cannot be; therefore metals are to be deſtroyed and made ſhapeleſs that after thereby the ſuperfluous earthy combuſtible ſulphur ſeparated the pure fine Mercurial ſpecies may ſpring, of which thing more *de amauſis*.

Of the ſmoothing and poliſhing looking glaſſes.

A Looking glaſs though it be very exactly fuſed and proportioned, yet it is of no value not rightly poliſhed and ſmoothed, for eaſily in the ſmoothing ſome parts it may ſuffer ſome dammage hurtful to it, and it is neceſſary to take from them firſt the groſſer part by the wheel as the cuſtome is with Pewterers and Copperſmiths with a ſandy ſtone, then to apply to them the purer whetſtone with water, until they are ſufficiently ſmoothed by grinding, which done the looking glaſſes are again to be taken from the wheele and to be moved to the wooden wheele covered with leather, rubed over with a fine prepared glazing ſtone until the creviſes contracted in the turning no more appear having got a croſs line, afterward another wheele covered with leather is required, to which a blood ſtone prepared and waſht with the aſhes of tin rubbed on,to which likewiſe by the aforeſaid meanes according to the ſame time looking-glaſſes are ſo long to be moved till they get a ſufficient fineneſs and brightneſs. You muſt keep ſuch looking glaſſes from the moiſt aire, and breathing, and to wipe them infected with aire and breathing not with any woolen or linen cloth, but with a Goats or Harts skin, and not any where but on the croſs line, with which ſleeked looking glaſſes are ſmoothed.Theycan alſo be ſmoothed with lead artificially melted with an emrald and water, firſt by grinding; ſecondly with a purer emrald and lead; laſtlywith a blood ſtone aſhes of tin: likewiſe alſo with whetſtones, by putting in another purer every time, whence at length brightneſs is procured to them by aſhes of tin.

Alſo the outward part of the looking glaſſes convexe may be ſmoothed, which repreſents ſhort ſhapes, and ſpreads the diſperſed rayes : but the inward part hollow gathers and multiplies, and preſents a ſhape.

Let theſe things ſuffice of melting looking glaſſes and poliſhing requiſites to the collection of the Sun beams, and although from the aforeſaid mixture other kinds of looking glaſſes might be made repreſenting wonderful ſhapes and ſeveral excellent things, as Cylindrick, Pyramidal, Parabolick, *&c.* yet they are omitted as impertinent, yet I could ſhew a way to make them, becauſe I have not undergone ſmal labors and charges in the ſearching of their preparation and uſe if it were neceſſary. But of all looking glaſſes that is moſt uſeful whoſe preparation we have ſhewn, whoſe diameter is at leaſt two or three ſpans, if thou wilt perform any ſpecial thing, although it be but of one or two ſpans, yet it gathers abundance of beams, ſo that thou maiſt melt tin and lead with it, if it be well ſhaped : yet the larger are the better. Nor ought they to be too broad that they may further caſt their beams,and better performe their actions or functions,let them have the twentieth or thirtieth part of the ſphere the ſection exactly obſerved which is the fundament of the Art.

Of metallick glaſſes.

As for metallick glaſſes much conducing to the perfection of metals and eſteemed by the Ancient Philoſophers, I would not omit in this place becauſe they are eaſily made by this furnace.

And indeed the Ancients have found theſe glaſſes queſtionleſs by chance, reducing the calcined bodyes into glaſs by a ſtrong fire, for very many ſecrets by this means not ſought for are found out. Oftentimes it happens to our labors that paſt hope we finde ſomething better or worſe, then the thing ſought; and I think this happens with theſe glaſſes, but however it be I am ſure theſe glaſſes have ſtood us in much ſtead, for *Izaak Holland* ſaith plainly, that vitrified metals brought to metals by that reduction do give better and nobler metals then the firſt vitrified, and indeed gold gives a tincture, but ſilver gold, and copper ſilver; and ſo conſequently the glaſs of other metals give better metals in reduction, the truth of which experience proves, and although I have not yet made great tryal in this work, yet I know that metals brought into dead aſhes to be turned into cleere glaſs cannot be again reduced into metals without great profit: yet one metal is more pliable then another, nor are our glaſſes the metallicks of goldſmiths fixed to other large ones for ornaments ſake, made by the addition of glaſſe made of fuſile ſand; but ours of the juice of metals. But I do not deny the vertue of Venice glaſs, mundificating another fuſile of metals, chiefly copper and tin, which though is not comparable with metallick peeces. I freely confeſs I have tryed this thing twenty times, and I never was deceived by it: but I know not whether it may prove ſo in a greater quantity becauſe I never tryed it, doubting of my veſſels not fit to retaine fuſible glaſſes a requiſite time: for I have ſpent much labor in making theſe kinde of veſſels, but hitherto in vaine. For there is very great hope of gaine if thou haſt very ſtrong crucibles. But this perfection is not without reaſon, for whileſt the metal is burnt to aſhes, much of the ſuperfluous combuſtible ſulphur is burnt (as you may ſee in Lead, Tin, and Copper, from the ſparks appearing in their calcination whileſt they are ſtirred and ſeparating) which if again reduced(*viz.* calcined) its better part(by benefit of melting)and the weightier ſinketh, the worſer flowing on the top is changed into droſs or glaſs. And the ſeparation of metal is done by the help of fire alone, to the ignorant and unexpert incredible: but conſider gilt ſilver to be ſeparated in fuſion, which is as it were corrupted by that common ſulphur, and the metallick ſpecies, being loſt it turns to black droſs before in melting it forſake the gold: which way alſo ſilver is ſeparated from copper, and this from iron. Obſerve alſo that black and crude Antimony, which reduced into aſhes by calcination, and melted is ſeparated by a ſtrong fire, the purer parts deſcending pure and white like ſilver, but the impure parts aſcending changed into glaſs or droſs, which ſeparation was never made without incineration although the Antimony ſtood long fluid.

Thou ſeeſt therefore the power of fire alone in melting metals, wherefore believ thou that thy labor ſhal not be in vain if thou knoweſt how to help the fire. Exerciſe thy ſelf therefore in it, for thou art ſufficiently inſtructed, and this furnace will help thee, without which it is impoſſible to meddle with ſuch things as experience teſtifies confirming my words.

Mention being made of metallick glaſſes, which belongs to the perfection of metals, I am forced to ſay ſomething alſo of other *Amauſa*, or coloured glaſſes, which are called Gemmes, and are worn for beautifying, which though it be not profitable, yet it is a delightful labour, which knowledge as well noble as ignoble have long ſought, not for gain, but recreation ſake, erring from the true way (although prolixly deſcribed in many tongues)through ignorance of the art to render cryſtal or flint fuſible and colouring it, content with lead glaſſes made of one part of cryſtals or flints, and three or four parts of minium or ceruſs, glaſs of no worth, as not only very ſoft and unapt for poliſhing, but alſo heavier then it ought by means of lead, and having a yellow or green colour, for every glaſs of cryſtal or flint and minium or ceruſe by themſelves,*viz.* without the addition of other colours, the lead gets a yellow colour hindering and altering other mixt colours, therefore a good ſtone is not made this way of lead and flint, but there may be of theſe Saturnine glaſſes, Venice glaſs, Aſhes of Jupiter and colours being added to them, be uſed diverſly of the goldſmiths, namely to colour gold;otherwiſe of no moment.

Therefore I will give another preparation, namely out of the flints *&c.* cryſtals of Sol with minium and ceruſe, with metallick colours, natural in colour and elegancy of excellent ſtones; but not harder then glaſs; for although cryſtal is harder then iron, yet it is deprived of its hardneſs in ſome meaſure, and is made like to glaſs, yet ſo much hardneſs reſerved, as ſerves to write in another glaſs, which glaſſes are eaſily poliſhed, in all things and by all moſt like, hardneſs excepted, to natural ſtones; with which not only various kinds of ſtones be made, and other gold, ſilver, and wooden works or pictures adorned; but alſo diverſe ſupellectils, as ſalts, hafts or hilts, cups,*&c.* and alſo images and antiquities may be formed (by fuſion) with gold, ſilver and ſtones of impreſſes, like to thoſe cut out of gems by the hand of an ingenious workman moſt delightful.

They are made after this manner: and firſt you muſt look for flints and cryſtals not coloured, but very white, gathered out of ſand or ſtreams, which you muſt heat in a covered crucible,and quench them glowing in cold water,that they crack and may be pulveriſed; otherwiſe they are ſo hard that when they are powdred, they take part of the morter and ſo are defiled;therefore it is worth your labor to handle them well. Afterward ℞ of flints prepared, and the pureſt ſalt of Tartar, equal parts,made in glaſed veſſels, but not in copper or iron, equal parts, mingle them and keep them to uſe.

And if thou wilt make this maſs into a gem, you muſt firſt mingle ſome colour (what you deſire)afterward ſo long place it (being put into a clean covered crucible (ſcarce half full) in a very ſtrong fire till all the ſalt of Tartar hath evaporated, and the flint together with the colour come into ſubſtance fuſible like glaſs: you muſt then put a ſmal clean iron wier, and draw out a little of the melted maſs for tryal; whether it have ſtood long enough in the fire, whether there be yet puſtles and little ſands, or whether it being exactly melted it ſhall deſcend to the bottome, which done you muſt take off the crucible and place it under ſome hot iron or earthy veſſel, that it may wax cold with the melted ſtone; otherwiſe the maſs will be broken in the crucible into very ſmal parts, and would be unfit for greater works: neither muſt you powre out the melted maſs for fear of the attraction of aire, ad puſtles to ariſe thence. But willing to make out of the maſs by fuſion, not carving, money or pictures; there is no need to leave the maſs in the crucible to coole, but preſently to powre it perfect and hot into a copper morter, & nothing will ſtick to the crucible, but all the maſs will be poured out without any waſt; And this maſs if thou wilt thou mayeſt powder or break into very ſmal bits for fuſion and impreſſion. But the maſs cooled in the crucible is to be taken by breaking the crucible, and to be reduced into greater or leſſer ſtones by cutting. But melting for money or images, you muſt place the money or image, which you will imitate, with the backſide or hinder dart downward in an iron ring a fingers breadth broad of greater capacity then the money, upon a ſtone or plaine wood, and ſpread a little earth or fine ſand, or earth through a cloth, namely as much as ſufficeth to cover the type, and upon this to put more of the beſt moiſtened with water like aſhes of cupels, and to impreſs it being moſt tenacious firmely to the type, but warily leſt the type be moved; which done you muſt turn the ring, and with a knife lift up the type, and to take it lifted up with ones hands or tongs, the image being left in the ſand, to be dryed by the heate of the Sun or fire. Afterward caſting the image, place the ring with the image of ſand impreſſed under a tile, and adminſter a ſtrong fire, that the whole ring with the ſand and the image of ſand may be very hot: then take off the ring to ſee if the image have ſuffered any loſs; which if it have not, you muſt put upon it ſo much of the aforeſaid glaſs courſly beaten, as ſufficeth in the fuſion to fill the image impreſſed on the ſand, which done put the ring again under the tile, and adminiſter the fire of fuſion till the glaſſe melt in the ring; to which touch with a ſmooth iron and light (with a handle) being hot, the ring taken firſt out of the furnace with tongs, preſſing the glaſs well to the type; and then place it under a hot iron, or earthen veſſel to coole; and being cold take image from the type which anſwers to it in all things, if thou haſt aright proceeded, exactly repreſenting the Carvers art or a ſeale impreſſed to a jewel, which excellent work is moſt fit to faigne, and repreſent antiquities and rarities.

The colouring of the aforeſaid maſs follows, in which it is made moſt like to Gemmes.

IT behooveth that colours be taken from metals and minerals, namely from copper, iron, gold, ſilver, Wiſmuth, Magneſia and Granate: of other colours I know nothing of certainty, copper commonly makes a colour green like the Sea, copper of iron graſs-green; Granate ſmaragdine colour, iron yellow or Iacynth; Gold the beſt skie colour; Wiſmuth common skie colour; Magneſia Amethyſtine: mixt, they give other colours; E. gr. Gold mixt with Silver gives an Amethyſt colour; Iron and Copper, a pale green; Wiſmuth and Magneſia, a purple; Silver and Magneſia various colours like an Opal.

Images are alſo made of diverſe colours, if the maſſes of diverſe colours be broken into bits and mixt be put upon the type, *&c.* And if thou deſireſt an opac maſs (green, red, skie colour, *&c.*) add a little calx of Tin darkning, on which as on a Baſis the colours inſiſt. For example; in making a Turcoiſe ſtone or a Lazulus, mingle to the Azure made of the ſilver Marcaſit or Zafora (to colour the maſs) the calx of tin, that they may melt together, and before the impreſſion be made, put upon the type ſome prepared gold, then ſpread and put upon this the aforeſaid glaſs; and the fuſion and impreſſion being made, let be made thence having golden veines like *lapis Lazulus* very delightful; But there muſt be *calx*, gold is not looſing its ſplendor in the fire, ſuch as is made by Mercury, or that, which better is precipitated out of *Aqua regia*, of which above.

Of the preparation of the colours for colouring the maſs of flints and Cryſtals.

THe plates of copper often heated, are quenched in cold water, of which more in the fifth part, from three to ſix grains of it may be mixed to ℥j. of the maſs for a ſea green colour. Iron is reduced into crocus by reverberation; of which from four to ten grains are added to the maſs for a yellow or Iacynth colour; Silver is diſſolved in *Aqua fortis* and precipitated with the liquor of flints, after it is edulcorated and dryed, whereof from one to ſix grains, added to ℥j. of the maſs, they make mixt colours.

Gold is diſſolved in *Aqua regia*, edulcorated and dryed, precipitated firſt with liquor of flints, whereof from grain four to ℈ß. mixt with one ounce of the maſs make a moſt elegant Saphire. And if from three to ſix of that ſoluble ruby made of the nitrous gold and ſilver of iron be added to ℥j. of the maſs they make a very polite ruby, Magneſia pulveriſed, whereof from ſix to fourteen grains to ℥j. of the maſs, make an Amethyſt.

Marcaſit diſſolved in *Aqua regia* precipitated with the liquor of flints, let be edulcorated and dryed, whereof from one to five grain to ℥j. of the maſs give a Saphire, but not comparably ſo polite as one made with gold.

But being unwilling to calcine Marcaſit, let him take Zafora, and mingle to ℥j. from five to ten graines; Granates of *Bohemia* or Oriental pulveriſed add from ſix grains to ℈j. to ℥j. of the maſs, for little green ſtones like to the natural ſmaragd or emrald: other things which remaine of the mixture of the colours are to be learned by experience.

To what uſes coloured flints and cryſtals are appointed is not here to be treated of; one uſe being excepted, which I ſet down for the eys, which are weakened by too much watching, the heate of fire and ſmoake; ſee thou have a waxen type circularly round, of the bigneſs of a diſh or trencher (The Optiques are wont to call ſuch *lentes*) to which put the beſt clay well mixed with haire: anoint the waxen type with oyle, and exactly apply the beſt prepared earth of crucibles (and durable in the fire) the thicknes of a finger, which dryed perforate in ſome part, that the waxe being melted by the fire may flow forth; afterward burn the type in an earthen furnace; being burnt fill it with prepared glaſs, and place it in a winde furnace till the glaſs melt; which at length cooled take off the type by attrition; and there ſhalt thou have the cryſtal reſembling the force of the type; which afterward thou muſt make and poliſh like ſpectacles in an iron diſh on both ſides; and take cover it wrought with a ſtrong iron wier, and thou ſhalt have a good cryſtalline *lent* bought for ſmal price which otherwiſe is ſcarce made of cryſtal of ſo great a bigneſs. And if thou wilt thou mayeſt colour the glaſs green very pleaſant to the ſight, and fit the foot to it for greater benefit. And the glaſs doth not only make in this for the multiplication of light in the night time that you may ſee a thing afar off in a chamber, but alſo for the fixing and calcining minerals by the ſun beams, and melting of metals & multiplying of pictures like a hollow glaſſe, and alſo ſo to compare it for other uſes with a hollow looking glaſs which doth the ſame of an equal bigneſs which the hollow glaſs; nor is there any other difference of them but reflexion. This glaſs inſtrument is made likewiſe another way and by leſs coſt & labor, if it be of a poliſht looking-glaſs if 2. great orbes are cut out with a diamond, and if they are ſomewhat ſoftened with fire and are left there ſo long in the heate untill they ſhall ſtick like waxe very cloſe to the ſtone, which done let them be cooled again, which afterward taken out will repreſent the forme of a hollow glaſs, to which it behooves to fixe a leafe on the convex part. And theſe glaſſes do the ſame that a hollow metallick looking glaſs doth; the reflexion excepted, which is not ſo ſtrong as of the hollow glaſs: And although the glaſſes are ſooner broke, yet they are very fit for the making of the following inſtrument.

And they are bound together by ſtrong wier applyed acroſs on the concave part, and a hole is cut in the brim with a diamond on one ſide of the bigneſs of a pea, to which is put an Aſcent, then the creviſes are exactly cloſed in every place with the beſt lute, which done, a ſilver or copper ring is to be tyed about it, holding thoſe glaſſes ſtraightly, ſo that the inſtrument may be fitted to the foote, all which well done thoſe ſtrong wiers are ſeparated or cut off, with which the glaſſes were bound at firſt, namely neer the copper ring; afterward it is infuſed with very pure *Aqua vitæ* through a funnel as much as is required for the filling it up, the inſtrument being filled the Aſcent is ſhut up, which is to be laid up to uſe; and this inſtrument is better then the hollow glaſs, eſpecially if it have in its diameter the breadth of one foote, and may be applyed to proſpective pictures, it doth excellently repreſent and multiply them.

Behind which if you place a candle in the night, it gives ſo much light in the chamber, that you would think it came from the Sun. It doth alſo many other things which here are omitted as ſuperfluous. And you may gather the diſperſed light in the aire in the night time with it, ſo that you may read the ſmalleſt writing. Such and others of the like things may be done by this furnace, all which to ſet down would ſwell the book too much. Other things of the metals examination and purification by fuſion, in another place.

Take this, Reader, which is given to thee, in good part, at another time thou ſhalt have better; and do not miſtake my writings, as if I did reprove the examinations of metals by the Ancients, fuſions and ſeparations, who only would communicate my opinion, and yeild my aſſiſtance for further proceeding; for I know that dealers in metals giving too much credit to their ſmall probes, when they finde nothing, do contemn oares as barren, often abounding with gold and ſilver; yet when he, *John Matheſ.* ſayes expreſly in his *Sarepta*, that minerals oftentimes tryed in a ſmal quantity do yield no gold and ſilver, which in a great quantity yeild a great deale, wherefore credit is not alwayes to be given to ſuch probes, often deceiving, as experience teſtifies.

But this not only in thoſe minerals which are digged out of the earth; but alſo in thoſe clayie and ſandy minerals, abounding with ſilver and golden flames; out of which neither by the leſs nor greater probes, nor ablution nor Mercury is drawn with gaine that thin and fiery diſperſed gold: which by ſome waters is done without fire eaſily; for I know ſuch mines are found neer many rivers of Germany and many places in other Nations of Europe, out of which honeſt gaine without much coſt and labor may eaſily be gotten. Neither are they dreams, which I have ſpoken parabolically of the perfection of metals, for it is poſſible by art to help nature in the perfecting things. There is therefore no more need of any thing then of knowledge; therefore the nature of metals being known, and their properties, they are eaſily ſeparated, purged and perfected.

But what I have written of the univerſal medicine, I have done for the aforeſaid cauſes, which have made me believe the thing, not as profeſſor of the Art. The other things of coloured red glaſſes and looking glaſſes I have added, becauſe they are eaſily prepared by this furnace, as ſometimes neceſſary in ſome works. Other things of the handling metals are not without cauſe now omitted, which happily may be ſometime delivered in another place, wherefore now we end.

FINIS.

THE FIFTH PART OF THE PHILOSOPHICAL FURNACES:

WHERE
It is treated of the wonderfull
NATVRE
OF THE FIFT
FVRNACE;

ALSO
Of the eaſie preparation of the Inſtruments and Materials belonging to the
foreſaid four
FVRNACES.

Moſt profitable for Chymical PHYSITIANS.

By JOHN RUDOLPH Glauber.

LONDON,
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of the Bible in *Little-Britain*. 1652.

THE FIFT PART OF PHILOSOPHICAL FURNACES.

Of the preparation of the Furnace.

AS concerning this, of which though I made no mention in the Preface, for it was not my reſolution to mention it in the laſt part,becauſe I was purpoſed only to treat of the inſtruments,as wel earthen as thoſe of glaſs, and alſo of the other neceſſary things belonging to thoſe four parts premiſed; yet I am willing now in this part, (which I have judged to be the moſt convenient place for it,for which I did before deſign another) to diſcover the wonderful nature thereof,as far as I may for the ſtudious Artiſts ſake. And although I know that more in this part then in all my other writings,eſpecially the ignorant and unskilful,will be offended; yet I will not therefore paſs it by, perſwading my ſelf that by this means I ſhall do a work that will be moſt acceptable to the ſearchers of Art, and Nature. For I do devoutly affirm, that this is the choiceſt of all my ſecrets that I confide in, in which I have already ſeen wonderful things, hoping that the divine benediction will ſome time or other be obtained upon the practice thereof. And as for the ſtructure thereof, much cannot be ſaid thereof, becauſe it is not built as other furnaces are, but it is every where found extructed by Nature, being ordained for no other works then thoſe of Nature, *viz.* for the making of any *menſtruum* that ſhall diſſolve gold, ſilver, and all other metals, and minerals without any noiſe, as alſo pretious, and common ſtones, and alſo glaſſes: the original of which is the original of the *Menſtruum.* Now what, and what manner of furnace that is that produceth this royal *menſtruum* (coming from the *menſtruum* it ſelfe) and that eaſily without any labour, you may eaſily conjecture, that it is not any common one, by the help whereof other things are diſtilled, that can yeeld ſuch a *menſtruum* that is not corroſive: which certainly is not any common *menſtruum*, becauſe there is but this one *menſtruum* that I know, which doth not partake of any corroſive quality, that doth more then any or all other corroſive waters whatſoever. For all corroſives whatſoever they are, as *aqua fortis*, *aqua regia*, ſpirit of ſalt, vitrioll, allome, and nitre cannot together, and at once diſſolve the cloſe union of gold, and ſilver, and other moſt hard ſubjects, that cannot be diſſolved in waters, though never ſo cauſtick.

This indeed is wonderful, and ſtupendous, that a thing every where found moſt vile and baſe ſhould doe ſo great a miracle, I know not what moved me to write of it, knowing that I ſhall in this part offend not onely the wiſe by writing ſo openly, but alſo the ignorant detractors, and ſlanderers that will accuſe mee of falſity. And truly theſe conſiderations might juſtly have deterred me but that I knew I might doe a good work, recalling many from their errors. For many being perſwaded that there is no other diſſolving *menſtruum*, beſides the aforeſaid corroſive ſpirits; but thoſe are Chymiſts that are ignorant of nature; yet the Philoſophers with one conſent ſay that thoſe corroſive deſtructive ſpirits make a fruitleſs ſolution of metals. For experience teſtifies that the ſolutions made by the help of *aqua fortis*, and *regia*, and other ſpirits, colour the hands, being that which a true Philoſophical ſolution doth not, and furthermore teſtifies that thoſe, *viz.* which colour the hands, are not to be reckoned among the true Philoſophical ſolutions, but to be contemned as Malignant. Wherefore I was willing to write theſe things to inſtruct thoſe that erre. Let no man therefore perſwade himſelf that a *menſtruum* is ſo vile, and contemptible is of leſs efficacy then thoſe corroſive ſpirits. I my ſelf did once ſcarſe beleeve that ſo great vertues could be in ſo moſt vile a *menſtruum*, untill I had experience of the truth in good earneſt. And the ſame thing happens here, which happens every where: *viz. great and coſtly things are ſought after, but ſmal and vile things are neglected,* contrary to the courſe of nature, doing all her works ſimply: let no man therefore be offended at the vileneſs of any thing. The Jews alſo were offended at the poverty of Chriſt, who was all things in all. Theſe, although they did ſee miracles, which no man but the Meſſias could doe, yet did not beleeve, being obſtinate by reaſon of the ſimplicity of his form, which if he had not aſſumed, being humane, he could not have been our Mediator before God. For we were wholly ſeparate from God by that fall of *Adam*, ſo as that being hardened in ſins we became the ſlaves of death, and hell, and ſo ſhould remain for ever by reaſon of the looſing of the Holy Spirit, which we had. Now that divine dew, or celeſtial Manna that doth from heaven water our dry hearts refreſhing us by his ſaving Word, and bloud ſhed for us, that holy Spirit, which otherwiſe we could never have received, was again communicated to us. Hence therefore we may ſee, how we were reconciled by a diſeſteemed man, and that neceſſarily. And as formerly the Phariſees and Prieſts were offended at the poverty of Chriſt being the ſon of a Carpenter, not acknowledging him for the Meſſiah; ſo alſo that univerſal *Menſtruum* (openly named) no man doth eſteem, as being baſe, and found in every dunghill. But doe not thou account it as a fault that I have here alleadged the poverty, and humiliation of Chriſt: for the diſcourſe doth not tend to his diſparagement, but to his great honour; becauſe he alone amongſt the ſonnes of men, although moſt contemptible could deliver mankinde from the power of the devil; as that univerſall Mercury the baſeſt of all ſubjects, being overcome by death, doth riſe again gloriouſly for the metallick *genus*.

Now here may and that not without cauſe be brought in ſome ſimilitudes demonſtrating our diſcourſe; and firſt of all how two contraries or extreams can without a *medium* be joined together: as for example, the ſubtile ſpirit of wine, as alſo of urine, cannot be reunited to its proper ſalt, *viz.* ſeparation, and purification, being once made, although they are of one and the ſame original, without a *medium*, that is, water, which is in ſtead of a mediator in this reunition. So alſo before the fall, God was with *Adam*, afterwards having tranſgreſſed the command of God, he was thereby deprived of that Divine ſociety, and made ſubject to divers kindes of miſeries, to an eternal, and ſpiritual death, until the incarnation of Chriſt the Mediator, who unleſs he had partaked of both natures, could never have reconciled and reunited us; as that moſt ſubtile ſpirit of wine or urine can never again be reunited to its proper fixed ſalt, without water which partakes of both natures. And if it were lawfull I could, and that eaſily compare the Philoſophical work with the incarnation and nativity of Chriſt, with his life and death; as alſo his reſurrection; but this is not my worke at this time, for it ſufficeth to make mention of it at this time. I wiſh it were lawful to compare terreſtrial with celeſtial miracles; without doubt the unbeleeving *Thomas* would have opened his eys. But now it is not lawful; and although *Moſes*, *Daniel*, *Joſephus*, and others that were skilled in naturall Philoſophy, and Magick, by the help whereof as well celeſtial as terreſtrial miracles are known, made mention of this thing in their writings, yet it is taken notice of by very few readers. Finally, if we might, and time would admit, we could demonſtrate, that God doth not alwayes eſteeme of great things,but rather threaten ruine to them;for he is no reſpector of perſons, or creatures,of which there are extant many examples. Now the world judgeth all things amiſs, eſteeming, and reſpecting only glorious things; but our care ſhould not be about them; for alwayes great things are done even by the ſmalleſt,and moſt contemptible.

I could here adde more things concerning the originall of the univerſal *menſtruum*, which is ſo contemptible, which doth by its wonderful powers and vertues diſſolve all metals, minerals and ſtones radically without any noiſe, unites and fixeth them; the ſolution whereof doth not colour the hand; the conjunction is inſeparable, and the fixation incombuſtible, I ſay I could adde more things concerning it, but that divers inconveniences, which by this means I might incur, as alſo the envy and hatred of others do deter me. For although any one doth think to diſcover the poſſibility of Art, and Nature; yet few would be content therewith, being very deſirous of all manner of revelation; and if we ſhould not gratifie them,we ſhould forthwith incur their hatred and envy, who would without doubt judge otherwiſe of the matter, if they had but any experience of our labors. Be thou therefore(curteous reader)contented with this diſcourſe,that ſhews thee the poſſibility of Art and Nature; and diligently ſeek after it in the fear of God,and without doubt thy labour ſhall not be in vain.

Of the Building of the Furnaces.

HOw thoſe furnaces of the firſt and ſecond part are to be built and made of potters clay, and ſtones; I need not ſay much, becauſe there be many books extant treating of this matter ſufficiently, yet this caution is to be obſerved in the building of the furnaces, *viz.* that thoſe furnaces in which a very ſtrong fire is not kindled, need not ſo ſtrong wals, as thoſe in which we diſtill, ſublime, and melt, with a moſt ſtrong fire. And for what belongs to ſubliming and diſtilling furnaces; you may erect them of thoſe common bricks which are made of the beſt clay, and well burnt, compaſſing them about with very ſtrong wals, that they may the longer retain the heat: or elſe you will continually have ſomething to doe in mending them, and cloſing their chinks, which hinder the regiment of fire. Wherefore they muſt be compaſſed about with iron hoops, that they may be durable and not gape. Now what concerns the melting furnaces, the aforeſaid bricks are not of uſe in the building of them, becauſe they not being durable melt in the fire, wherefore you muſt make other bricks of a very good earth that is fixed in the fire, ſuch as is that of crucibles, &c. of which afterwards, which are to be made in a brazen or wooden mould, and to be burnt, and it matters not whether they be round or ſquare, a regard being had of the furnace, that ſix or eight of them make one courſe, or row. But you need not build the whole furnace of theſe ſtones, for it is ſufficient, if the place only where the coals ſtill lye, be made of them, and the other part of the furnace be made of common bricks.

A Lute for the erecting of Furnaces.

Lute may be made divers wayes for this buſineſſe; for men prepare their lute ſeveral wayes as they pleaſe. Some mix with ſifted potters earth, the beaten hairs of cows, oxen, harts, or the chaffe of barley, tow, flocks, horſe-dung, and the like, that hold together the clay, and prevent chops, to which they adde ſometimes ſifted ſand, if the clay be too fat, beating the mixture together with water, and bringing it to a juſt conſiſtency. And this is the beſt mixture, that is not ſubject to cleaving, yet weak, becauſe in length of time the hair and chaffe are burnt, wherefore the furnace becomes thin and weak. Many leave out combuſtible things, and mix potters clay, and ſand together, and temper them with brine, for the making of their furnaces. And this is the beſt mixture, becauſe it is not combuſtible as the other is, neither is it ſubject to cracking by reaſon of the ſalt: and for this purpoſe the brine of fiſh and ſalt fleſh doth ſerve, and is very good, becauſe the bloud helps the joining of them together: but if the *caput mortuum* of vitriol or *aqua fortis*, being mollified, be mixed with potters clay and ſand, you goe a better way to work: for this lute is not at all ſubject to cracking, but fixed in the fire and permanent. With this lute are retorts, and goards very well luted, and coated, alſo the joints of retorts, and receivers cloſed: this being mollified with a wet cloth applyed to it may again be ſeparated, and taken off, as that alſo with which ſalt is mixed: but the other lutes that want ſalt will not be ſeparated, by reaſon whereof glaſſes oftentimes are broken. Wherefore in defect of the *caput mortuum* of Vitriol, temper the clay and ſand with brine. But many mixe the filings of iron, powdered glaſs, flints, &c. but you need not them for the building of the furnaces, but only for the coating of certaine glaſſes uſed for ſeparation, and diſtillation, becauſe the filings of iron being helped with ſalt binds and joins together moſt ſtrongly.

Of the cloſing of the joints, hindring the evaporation of ſubtile ſpirits.

The aforeſaid lute is ſufficient for the cloſing of the joints of the firſt furnace where air is not kept from the ſpirits, but not of the veſſels of the ſecond furnace, where moſt ſubtile ſpirits are diſtilled, which it cannot retain, penetrating the ſame with the loſs of the better part: wherefore you muſt make choice of another; unleſs upon the other being well dryed beſmeared over with a pencil, a mixture made of quick lime moſt ſubtilly powdered, and Linſeed oil, which the porous clay attracting to it is fortified, ſo as to be able to retain thoſe moſt ſubtile ſpirits: but this lute can hardly be ſeparated again; becauſe refuſing water it cannot be mollified, wherefore the clay is to be tempered only with the white of egges, and to be applyed with linen clouts: but you muſt prevent the burning of the linen by reaſon of the extream heat of the neck of the receiver, by putting between an iron or ſtrong glaſs neck, *viz.* betwixt the receiver and the retort. The joints alſo may be cloſed with oxe bladders wet in the white of egges, alſo with ſtarch tempered with water, if it be ſometimes applyed, being ſmeared on paper. For by this means thoſe moſt ſubtile ſpirits are eaſily retained, but not corroſive, for which uſe the *caput mortuum* of *aqua fortis* is more convenient, which after it is dryed muſt be ſmeered over with a mixture made of linſeed oyle, and quick lime.

And divers kinds of theſe lutes are had being deſtined to divers uſes.

Another lute for broken glaſſes.

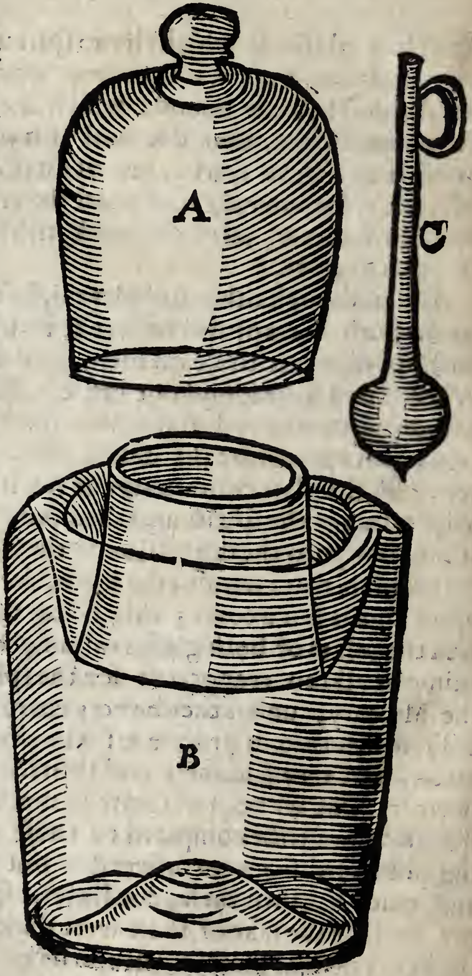
IT happens ſometimes that glaſs veſſels, as receivers, and retorts have ſome cracks, but otherwiſe are whole and ſound; which are greater in thoſe glaſſes that doe again ſuffer the heat of the fire, wherefore at laſt the glaſſes are broken, which if you will prevent, make a liniment or thin lute of linſeed oyl, quick lime, and red lead; which being ſmeered over a linen cloth apply to the crack, upon which being dryed apply another: but if the crack be very great, you may apply 3 or 4 linen cloths, for the greater ſafety ſake: as you may apply the whites of egges beaten together, upon the cracks with linen and caſt upon it quick lime ſifted very fine, and preſs it down hard with your hand: which being done, you may apply over them more linen clouts wet in the whites of egges, and caſt upon them quick lime again: which when the lute is well dryed, retaines the ſpirits, but ſooner ſubject to the corroſion of corroſive ſpirits then the former.

Note well that quick lime is not to be mixed with the white of eggs, and ſo uſed upon linen clouts, as the manner of ſome is; becauſe the whites of egges acquire a hardneſs from the lime, before they be united, and therefore cannot ſtick, but linen clouts wet firſt therewith before the quick lime be caſt upon them, ſo that the lime doth not immediately touch the glaſs, being applyed betwixt two linen clothes.

How thoſe ſubtile ſpirits when they are made may be kept that they evaporate not.

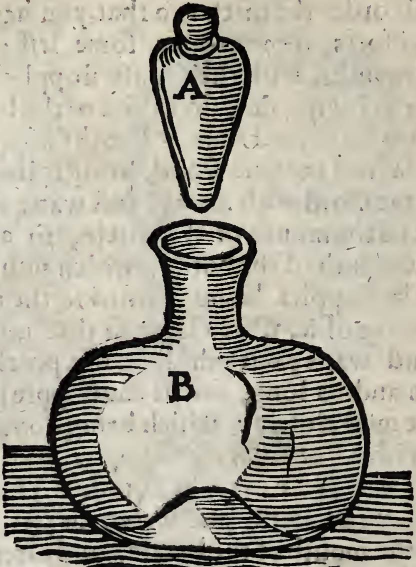
THoſe glaſſes in which thoſe ſpirits are kept are for the moſt part ſtopt with cork, or wax, upon which afterward bladders are bound: which ſtopping is convenient for ſome ſpirits, that doe not prey upon cork or wax: For all corroſive ſpirits, as of vitriol, allome, common ſalt, nitre, &c. corrode cork; and lixivial ſpirits, as that of hartſhorn, tartar, ſalt armoniack, urine, wine, &c. melt wax, and penetrate it.

And although other ſtopples might be made, which might retain both ſorts of ſpirits, yet it would be tedious and laborious to open thoſe ſo often, and to ſtop them againe. Wherefore I have found out a fit kind of glaſſes, *viz.* of ſuch, whoſe mouths have diſtinctions, and are fit to receive their covers; as it appears by the delineation. *A.* ſignifies the cover: *B.* the glaſs containing the ſpirit. *C.* a drawer by the help whereof the ſpirits are taken out of the glaſs, when there is occaſion, into the diſtinction in the brim of the mouth; *viz.* of the glaſs that contains the ſpirit, is put quickſilver, and upon this is put a cover; this being done the Mercury cloſeth the joints of both glaſſes running in the brim, ſo that nothing at all can evaporate: for the ſpirits doe not penetrate the Mercury, unleſs they be very corroſive (a thing to be noted) which then in proceſs of time turn the Mercury into water, but very ſeldome; and then the Mercury is to be renewed. But we need not give ſo much honour to corroſive ſpirits, as not to be compared to thoſe volatiles, which being abſtracted from corroſives doe not prey upon Mercury; and much leſs then theſe, doe lixivial ſpirits corrode Mercury: and for the ſake of theſe were theſe glaſſes invented, by the help whereof moſt ſubtile ſpirits are without any loſs of their vertues, if you pleaſe, a very long time preſerved and kept. And becauſe when there is occaſion the ſpirits cannot be poured forth by reaſon of the Mercury in the brim, you muſt get a drawer like to that, by the help whereof wine is taken out of the veſſell, but leſſer, having a belly with a little mouth made very accurately. This being let downe you may take up as much as you pleaſe, as is needful; the upper orifice whereof being ſtopped with the finger nothing drops out; being put into a leſſer glaſs is thence poured forth for your uſe. Then you muſt again cover the remainder of the ſpirit that is in the glaſs, and as oft as is needful take out with that drawer as much as is uſefull. And this is the beſt way by which moſt ſubtile ſpirits are retained; which alſo are very well retained in thoſe glaſſes, whoſe ſteeples are of glaſſe ſmoothed with grinding. But this is a more coſtly way of keeping in ſpirits, and it is done after this manner.

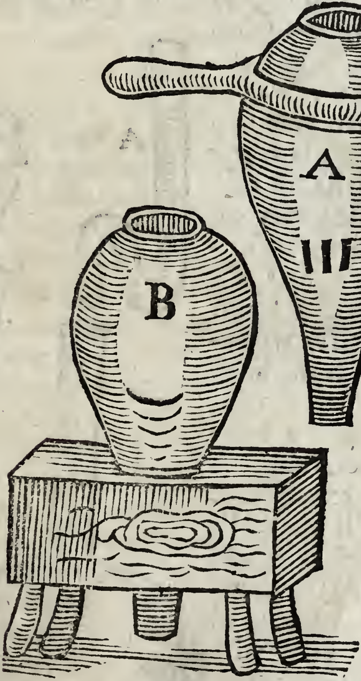


How glaſſe ſtopples are to be ſmoothed with grinding for the retaining of ſpirits in their glaſs veſſels.

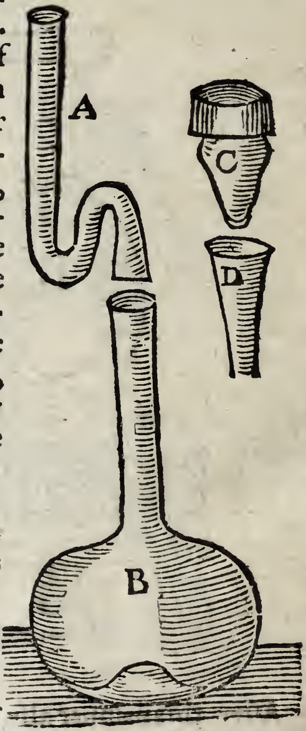
First of all order the matter ſo that you have glaſs bottles of ſeveral ſorts, ſome greater, ſome leſſer, with ſtrong necks, and mouths, with their glaſs ſtopples, which being ſmoothed by grinding ſhut the orifice of the bottle very cloſe: Now they are ſmoothed thus. Put the ſtopples in the turn, being ſet or faſtned in ſome wood, bring it into a round ſhape, then being moiſtned with *Smiris*, and water mixed together, let it be put to the mouth of the bottle, ſo as to be turned round in the mouth of the bottle, which you muſt often take away from the ſtopples being faſtened to the turn, for the oftener moiſtening of it, which is with that mixture of prepared *Smiris* and water, with the help of a pencil, or feather; and that ſo often and ſo long, untill the ſtopple ſtop the mouth of the bottle moſt cloſely: which being done, you wipe off the *Smiris* with a lint from the ſtopples and mouth of the the bottle, then ſmeer over the ſtopple with a liniment made of ſome fine waſhed earth, and water, or oyl, and again turn it round in the mouth of the bottle, and often ſmear it over with this freſh mixture, untill the ſtopple be moſt exactly ſmoothed, which afterward is to be tyed to its proper bottle; the ſame alſo is to be underſtood concerning the reſt, that one may not be taken for an other, &c. And that you may not need to take away ſo much from the ſtopples, and bottles, get ſome copper moulds made for the ſtopples, which ſtopples muſt be taken whileſt they bee yet warm, ſoft, and new drawn from the furnace, that they may be made of a juſt roundneſs, as alſo other copper moulds. Which muſt bee put into the mouths of the bottles, whileſt they be yet hot and ſoft, for the better making of them round, whereby afterwards the ſtopple may more eaſily, and quickly become fit to ſtop the mouths of the bottles very cloſe,(as for example: *A.* is the ſtopple, *B.* the glaſs or bottle) if thou knoweſt how to order them rightly, they will quickly and eaſily fit one the other.



In defect of a turn, proceed after the following manner, which is ſlow, yet ſafe, becauſe in a turn the glaſſes oftentimes waxing hot are broken by reaſon of the over great haſt; and it is thus, make an iron or wooden receptacle fit to receive the glaſs bottle, which being covered about with linen, and put in, join both parts of the receptacle warily and ſoftly, with the help of a ſcrew, that the bottle be not broken, and becauſe that inſtrument, or receptacle of the bottle being faſtened to a form with the help of a ſcrew, cannot be moved. Afterwards cauſe that another wooden inſtrument be made for the ſtopple (as for example, *A.* the ſtopple with its receptacle *B.* the bottle with its receptacle) that may be ſeparated in the middle, and be again reunited with a ſcrew after the putting in of the ſtopple, which being ſmeered over with the aforeſaid mixture of *ſmiris* and water, take an inſtrument with both hands,and put the ſtopple round about the neck of the bottle, and grind it round upon the other, as Wine Coopers are uſed to doe in ſmoothing the taps; and that ſo long untill the ſtopple be fit for the bottle; then reiterate the ſame labour with the earth *tripolis*, untill it bee compleated; and it will ſtop as well as a ſtopple made by the help of a turn.



After this manner alſo you muſt work thoſe greater glaſs receivers of the firſt furnace, that without luting they may be cloſed. Stopples alſo of vials for fixation may be wrought after this manner, which inſtead of luting may be put into the mouths of the vials, upon which are put caps of lead ; by which means in caſe of neceſſity they may be lifted up, *viz.* in caſe the ſpirits by too ſtrong a fire be ſtirred up and rarified, by reaſon of the danger the glaſſes are in to be broken, and may again fall down into the mouths of the bottles being preſſed down with the leaden caps, and ſo ſtop cloſe again. And this way of ſtopping is better then that which is done with cork, wax, ſulphur, and other things : becauſe in caſe the regiment of fire be well governed, and by conſequence an errour is committed, you may preſerve your glaſſes by lifting up of the ſtopples, *viz.* when the ſpirits are too much ſtirred up. And although this be a better way of ſtopping then the other common way; yet that which follows is better then this, whereby the ſpirits are eaſily retained, the glaſſes being preſerved, and without all danger of being broken. And it is thus, *viz.* get a glaſs pipe to be made crooked according to the figure ſet down, into the belly whereof is quickſilver to be put from halfe an ounce to an ounce, or thereabouts, and let this pipe which hath a belly be put into the viall containing the matter to be fixed (as for example, *A.* the pipe with a belly, *B.* is the viall, and againe *A* ſignifies the aforeſaid leaden cap with the viall *B*) the joints whereof afterwards are to be covered over with lute, and the viall will never be in danger of being broken.



Theſe foreſaid ways of ſtopping are the beſt, by which the breakings of glaſſes are prevented, *viz.* whileſt men are in an errour about the fixing of ſpirits of ſalts, minerals, and metals, which although they are fixed with great coſts and labours, yet doe not ſatisfie what is promiſed and expected, becauſe thoſe kinds of fixations are violent and forced, and by conſequence contrary to nature: but in the profitable fixation of ſpirits, not ſo, where we muſt follow Nature, and not commit our ſelves to fortune in our labours. For onely fooles are wont to breake their glaſſes in their ſuppoſed tincture; but Philoſophers not ſo; for *every violent thing is an enemy to Nature*; and all the operations of Nature are ſpontaneous. They erre therefore, and never ſhall come unto their deſired end, who attempt violent fixations. I cannot bee perſwaded that bodies dead, or halfe dead can be ſo mixed together as to multiply: but I could eaſily beleeve that the conjunction of male and female of one and the ſame ſpecies, ſound and nouriſhed with ſound and wholeſome meats to be naturall, and to make a ſpontaneous propagation, and multiplication of their ſpecies; *viz.* of thoſe that endure in a good, and adverſe fortune, in life, and death; but the conjunction of dead things to be dead, and barren. Doe but conſider how many and various inſtruments both gold, ſilver, copper, iron, tin, and lead; as alſo earthen, glaſs, ſtone and other veſſels of other materials have been already invented, and found out for the fixing of Mercury alone with gold and ſilver, but in vain, becauſe they have no mutuall affinity. For although Mercury adheres to metals, or metals to it, yet that is not by reaſon of any affinity for multiplication, or perfection ſake: for it appeares by experience that Mercury flies away in the fire, and leaves the gold, ſilver, and other metals. Where it is clear that they have no mutuall affinity requiſite for the multiplication of metals, nor is it ever poſſible: For they that have a mutuall affinity embrace one the other and abide together for ever, although volatile, yet never leave one the other like gold and Mercury, when they are united together with the ſtrongeſt bond, ſo that they can never be ſeparated although with the ſtrongeſt fire. Wherefore a great care is to be had in the fixation of things joined together; which if they have a mutuall affinity, will embrace and retain one the other, without the help of any curious glaſſes with long necks. Of which things if thou art ignorant, abſtain from medling with them, as being more hurtfull then profitable, as dayly experience both mine owne, and others doe witneſſe. But that thou mayſt the better underſtand what things have a mutuall affinity one with the other: attend a little what I ſhall ſay.

Is not hee to be laughed at for his folly who will poure raine, or common water on gold, ſilver, and other metals to fix them? See therefore the unwiſe actions of many covetous Alchymiſts in ſo hard a matter, that ſpend their time in trifles, reaping according to what they have ſowed, and at laſt leave off their work which they have undertaken, after they have expended much coſt, and ſpent their labour in ſtenches, watchings, and cares. For I have oftentimes ſeene thoſe, that although they have not choſen common water for their *menſtruum*, yet have made choice of *May*-dew, ſnow or rain gathered in *March*, and water diſtilled out of Noſtock, or excrement of Starres; vegetables and animals, for their ſolvent, in which they have loſt their labour.

For as the radicall union of the aforeſaid things with metals is impoſſible: ſo never is any good to be produced from thence, by reaſon of their difference. And ſuch may deſervedly be compared to thoſe, who aſcending a very high ladder that hath many ſteps, doe preſently endeavour to flye from the lowermoſt to the uppermoſt; which is a thing impoſſible: ſo neither can there be any conjunction of things that doe ſo much differ. But as any one may eaſily aſcend the higheſt ſtep by degrees, ſo alſo any one may (which yet hee need not doe) join together extreames, by adding firſt a thing that is moſt neer to one of the extreames, and then to this another next to it, and ſo by conſequence untill you come to the other extream, which is a thing that requires a very long time, and is a worke without profit.

And if things be joined together that have the next affinity, the one will be delighted in the other, and the one will embrace the other, will overcome, and retaine it. As for example, there is a certaine ſalt, and that onely that can coagulate and turne into a body like to it ſelfe, even common water, which can be fixed in a very little time with and by one onely certaine minerall, which is very volatile. Minerals alſo may bee fixed by metals, and metals, (a thing which I never yet tryed) by a certaine thing more excellent then metals, without all doubt. But therefore it is not needfull in the fixation of minerals to begin with the coagulation of water, whereby it is turned into ſalt; and this afterward into a minerall; which would bee too tedious; but it is ſufficient to begin in things moſt near, in which nature hath begun to operate, but hath left imperfect: for then there is hope of gain, if contrary things are not joined together, elſe not. Behold how ready Nature is at hand to help any thing that is adminiſtred to it, which it can help: as for example, make ſalt of calcined Tartar by the help of ſolution and coagulation (but doe not take that for it, of which a little before mention hath beene made, which is farre better then ſalt of Tartar) of which after it is calcined obſerve the weight; upon which afterwards poure halfe the weight of moſt pure raine water; diſtilled to avoid the ſuſpition of impurity, then draw off the water gently in *Balneo*, or ſand, which againe poure upon the remaining ſalt of Tartar, and againe draw it off; and this doe ſo often as is needfull, untill all the water be conſumed. Which being done take out the ſalt, and weigh it being firſt made red hot in the fire, and thou ſhall find it to be increaſed in weight, which increaſe came from the water, and not elſewhere.

Note well that the cohobution of the water is to be reiterated often upon the ſalt of Tartar. Obſerve that by this means the water is convertible into ſalt by Art, &c. And if thou doſt not beleeve the converſion of things materiall and corporeall, how wilt thou beleeve the converſion of things immateriall, as of the Sunne, and fire into a materiall fixed ſubſtance; of which thing ſomething ſhall bee treated in our treatiſe of *Aurum potabile*, and more at large afterwards in a treatiſe *De Generatione Metallorum*, if God permit: For you muſt know that the circulation of the elements, and things elementated, *viz.* how one is converted into another; and how they nouriſh and cheriſh one the other. As for example, The earth yeelds water, the water aire, the aire fire, and the fire againe earth, which if it be pure yeelds pure earth. But that thou maiſt underſtand aright how any thing to be fixed, may be retained by another by reaſon of affinity, obſerve the following example. The Husbandman caſting ſeed into the earth for to multiply, doth not chooſe any earth, but that which is convenient for multiplication, *viz.* an earth that is neither too dry, nor too moiſt. For the ſeed caſt in ſand cannot grow, and is loſt. For whatſoever is to be preſerved is to be preſerved by an equall temper; which by how much it is more equall or like, ſo much the more perfect ſubſtance it doth produce. Humidity therefore being neceſſarily requiſite for the growth of vegetables, without which they can neither grow, nor multiply, but the ſeed being caſt into moiſt ſand, and the raies of the Sunne acting upon that ſand, and ſuddenly conſuming the humidity thereof, whence followes the burning up of the ſeed in the dry ſand, becauſe there was no affinity betwixt the water, and ſand, without which the water could not be retained by the ſand, and conſequently the ſeed deprived of its nutriment; it followes neceſſarily, that ſome *medium* bee required, or bond joining and binding the raine, and ſand; *viz.* ſalt by the help whereof the raine water is retained by the ſand, that it be not ſo eaſily conſumed by the heat of the ſun.

The ſand therefore retaines the ſalt, and the ſalt the raine water for the nutrition of the bud. But every ſalt is not convenient for this buſineſſe. For although Chriſt ſaith, *Luke* Chap. 14. verſe the laſt, that earth without ſalt is barren, yet any common ſalt is not to bee underſtood thereby. For ſome ſalts, as common ſalt, ſalt of Vitrioll, Allome, &c. doe not onely not doe good, but doe hurt to vegetables, hindring by reaſon of their dryneſſe their growth and increaſe. Now lixiviall ſalts promote them, that which country-men doe better underſtand, then our ſuppoſed Philoſophers: For they know how to help their barren ground with the excrements of animals, which are nothing elſe but a lixiviall ſalt mixed with ſulphur, makeing the earth fat and fertile. And by this meanes a *vehiculum* (rather a bond) is adminiſtred to the raine water, that it may the leſſe be conſumed by the heat of the Sunne. Moreover all ſeed (conſiſting in lixiviall ſalt and ſulphur) loves its like, from whence it borrowes its nutriment, which is obſerved by a few learned as unlearned. Husbandmen may wel be excuſed of their ignorance,becauſe they work onely out of uſe and cuſtome. But others that beare the title of learning not ſo: whoſe duty it is to render a reaſon of germination, who may deſervedly be aſhamed of their ignorance, being leſſe knowing then husbandmen. It is manifeſt that dung makes the earth fruitfull; but how and for what reaſon, not ſo; but if it did want nitrous ſalt, it would neither make it fertile, nor promote germination. For it is not unknowne that Nitre is made out of the excrements of animals. The goodneſſe therefore of the dung conſiſts only in the lixiviall ſalt contained in it,and not in the ſtraw.

But you will ask perhaps, why doth not any other ſalt help germination? Why is the ſalt of dung required to germination, and no other? Wee have already anſwered that, like are helped with like, and contraries are deſtroyed by contraries. For experience doth teſtifie that any ſeed conſiſts in lixiviall ſalt and ſulphur, and not in any acid ſalt; wherefore alſo it doth deſire and embrace its like. Let him therefore that will not beleeve it make triall of the diſtillation of the ſeed of any vegetable, of which let him force over a pound by retort; and he ſhall ſee by experience, that not an acid ſpirit, but a flegme together with plenty of oyle, and volatile ſalt whitening the whole receiver, comes over; being that which no root or ſtalk can doe: For the chiefeſt vertue, odour, and taſt of vegetables, animals, and minerals is found in the ſeed, in which thing provident Nature hath done very well, whileſt ſhe attributes the chiefeſt faculties to the ſeed, being more obnoxious to injuries then the reſt, which is alſo preſerved, nouriſhed, and cheriſhed by its like.

Now this diſcourſe which might otherwiſe have beene omitted, was therefore appointed, that the cauſe of the germination of vegetables might bee made the more manifeſt; and that what things have beene ſpoken of attraction, and fixation of all things might the better be underſtood. The germination therefore, and multiplication of both minerals, vegetables and animals muſt bee ſpontaneous, and not forced, as is that barren and fruſtraneous of the falſe Chymiſts, becauſe preternaturall. Wherefore when you fix any thing bee cautious in the adding of any thing that ſhould retaine it, with which nothing can bee fixed. Fire indeed doth alwayes doe its office; but it knowes not how to help any preternaturall thing; which it doth wholly deſtroy, againſt which nothing can bee prevalent, unleſſe it bee rightly ordained according to Nature.

And thus much bee ſpoken for inſtruction ſake, to thee that intendeſt to fix any thing, leſt otherwiſe thou loſeſt thy labour.

Of the making of the beſt crucibles.

THe beſt crucibles that are requiſite for the fourth furnace, not being found in every place, I thought it worth while to ſet down the manner of making them: for I am not ignorant how oftentimes many for want of theſe are conſtrained to be content with thoſe that are uſeleſs, and truly with great loſs of metals, whileſt the crucibles are broken in the fire, and conſequently with a tediouſneſs in drawing them out of the aſhes.

Chymiſts have been in a great error a long time, and not only they but alſo goldſmiths, and they that ſeparate metals, as alſo others that need the help of crucibles, who perſwade themſelves that the beſt earth that is fit to make the beſt crucibles is to be found no where but in *Haſsia*; and therefore with great charges have cauſed that Gibſenſian crucibles be brought over; not conſidering that almoſt in every place in Germany ſuch earth is to be found, which indeed is a very great folly of men, proceeding from the not knowing of good earth which is to be found almoſt every where. I do not deny but that the earth of *Haſsia* is very good for crucibles, tyles, retorts, and other veſſels which are to be ſet in a very great fire, for which cauſe alſo is commended Gibſenſian, and Waldburgenſian crucibles.

A few yeers ſince ſome have made their crucibles, and other veſſels that will endure the fire well, of earth brought out of *England*, and *France* into *Holland*, which have retained metals very well in the fire, but not ſalts, becauſe they are too porous and not ſo compact as thoſe of *Haſsia*, wherefore thoſe of *Haſsia* are ſtill preferred before others, retaining better, metals, and ſalts. But although this earth be brought from thence to other places, yet ſuch ſtrong crucibles could not be made thereof, the cauſe whereof being not the conſtitution of the aire, and place to which ſome have falſly imputed it, but an error in the making and burning of them. For in *Haſsia* there is a great abundance of wood, of which there is no ſparing in the burning the crucibles even to a ſtony hardneſs, which could not be done by a ſmal fire of turffes.

The like errour is committed about ſtone pots, and other veſſels which are made at *Frechemium* and *Siburgus* and other places neer *Colen*, which are carryed almoſt through all Europe, the goodneſs whereof is aſcribed only to the earth, and not to the making. But now experience hath taught us that any good earth doth become ſtony in a violent fire, without reſpect of the place where it is taken. Wherefore it is very probable, being a thing poſſible, that ſuch veſſels are made elſewhere: for every earth being burnt retaining ~~a~~ white colour, *viz.* with an indifferent fire, makes pots, and crucibles porous, but with a ſtronger, and with a longer delay, compact like glaſſe, eſpecially if common ſalt be caſt in a plentiful manner upon them, being burnt with a very ſtrong fire, becauſe it addes to them being very well burnt within an external glaſſes ſmoothneſs, by which means they will be the better able to retaine ſpirits in the fire. Wherefore let no man doubt concerning the making the foreſaid veſſels of any other earth that is white in burning, with the help of a very ſtrong fire: which by how much the greater whiteneſs it gets in burning, by ſo much the better and excellent pots it makes; and ſeeing there is a great difference of making crucibles to be ſet in the fire, and of ſtone pots retaining liquid things, I ſhall ſhew the manner of making both, *viz.* of ſtone pots belonging to the firſt and ſecond furnace, and of crucibles to the fourth, and thus it is.

He that will try the goodneſs of white and pure earth, *viz.* whether it grows ſtony in the fire, let him caſt a peice of crude earth of the bigneſs of a hens egge into a very ſtrong fire, obſerving whether it doth quickly or ſlowly cleave and break in pieces; which if it doth not cleave and become powder, although it may have ſome cracks, is good earth, and fit for burning, if ſo be the mixture be well made, in which lyes the art.

The earth that is to be burnt for pots, receivers, and botles, need no other preparation then that for bricks, which becauſe for the moſt part it is too fat, you muſt mixe with it clean ſifted fuſible ſand, tread it with your feet, and knead it with your hands before veſſels be made thereof; which being made are to be dryed in the heat of the Sun, or in ſome other warme place; and being dryed are to be burnt in a very ſtrong fire for the ſpace of twenty four or thirty hours, on which in the mean time you may caſt ſalt if you pleaſe, which being thus burnt do like glaſs retain eaſily all liquid things. But let him that makes crucibles, tyles, bricks and other veſſels appointed for a very ſtrong fire, uſe more diligence in the making of them. And truly firſt he muſt pound very ſmal with a wooden hammer, the earth being dryed wel in the Sun, or elſwhere, and being pounded ſearſe it through a great ſearſe, & to one part of the ſifted earth mix two, three, or four parts (the ſaltneſs of the earth being conſidered) of the earth burnt in a potters furnace, and powdered, which being mixed with a ſufficient quantity of water he muſt tread with his feet, and afterwards knead with his hands, and the earth will be prepared for the making of veſſels, and when he makes crucibles and teſts, let him provide for wooden moulds both greater and ſmaller, made in a turn, by the help whereof they may be made; for the aforeſaid veſſels cannot be formed by the uſual art of the potters; becauſe the matter of them muſt be very lean, appointed for a moſt ſtrong fire, wherefore commonly they are made by the help of moulds after the following manner.

Let a piece of the prepared earth be applyed with your hands to the mould, which you muſt hold in one hand, applying and fitting the earth thereto with the other, or hold it with your legs, that the earth may be applyed with both your hands. Alſo you muſt firſt rub the mould very well with clean ſifted ſand, for elſe the earth will ſo ſtick to the wooden mould, that a crucible can ſcarce be taken off without danger, which being done, it is further fitted by ſtriking it with a wooden inſtrument ſmoothed for the purpoſe, by which means the crucible lyes very exactly upon the mould, for by this means crucibles are made very ſtrong; which being done alſo let the crucible be taken off, and ſet upon a board, and be

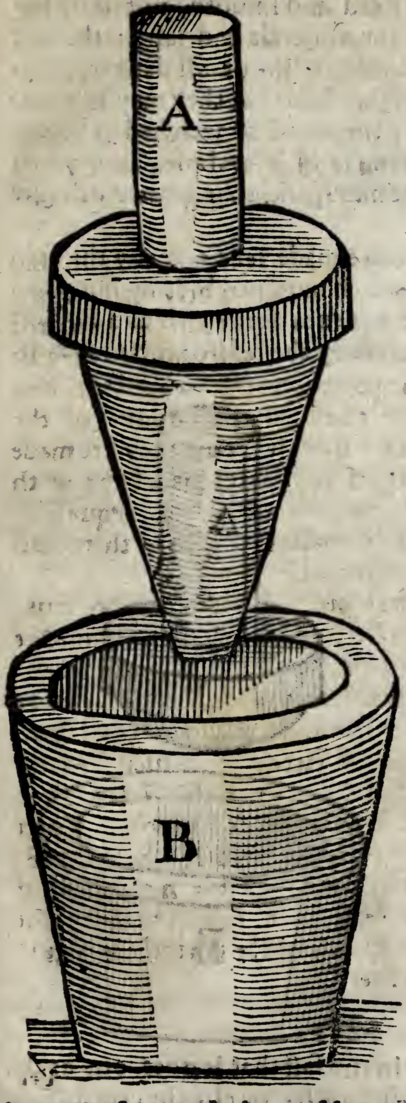
dryed,

dryed, firſt in the aire, then by the heat of the fire, or ſun, and then be burned in the firſt chamber of our fourth furnace, or in a potters furnace. And if you intend only to melt metals, and not ſalts, you need not burn the crucibles if they be well, and exactly made.

Now this caution is to be obſerved in melting by the help of crucibles not burnt, that you muſt give fire above by little and little, for fear of breaking the crucibles feeling a ſuddaine heat.

Now that they may be made equal in ſtrength, weight, and thickneſs, you muſt weigh one crucible rightly made by the help of the mould in one ſcale, and a piece of the prepared earth, which is to be put into the other ſcale, and if they be equal in weight, take out that piece, and put in another; and this do ſo often, till you be come to the number of the crucibles which you have made : By this means they are made equal, and you need not cut off any overplus of the earth when it is fitted to the mould, becauſe all are made equal, by reaſon of the equal weight of the matter of each of them, and the work is ſooner done then otherwiſe.

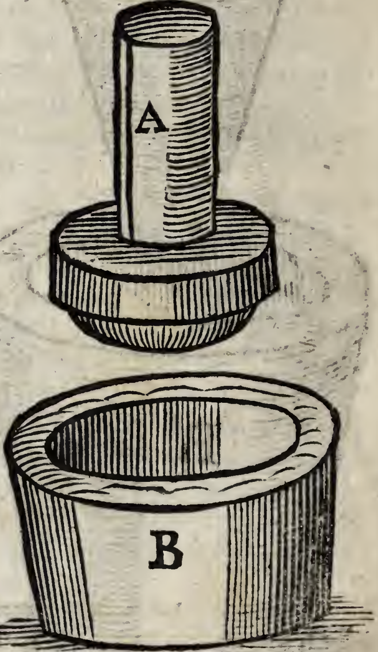
This indeed is the beſt way but tedious and laborious, where conſidering the matter a little more ſeriouſly, I found at laſt that the following way is far better then the former: whereby not only ſtronger crucibles are made, but alſo more in one hour, then in that former common way in three or four. Where firſt the mould is made of latten (on which I adviſe you to apply the earth) ſignified by the letter *A. viz.* that being the beſt, which is made by the help of fuſion. Then the counter-mould anſwering this, ſignified by the letter B. yet ſo that that do not enter too deep into this, not touching the bottome by the diſtance at leaſt of one fingers breadth; but in greater crucibles a greater thickneſs of the bottome is required, as the practiſe will teach thee.



Let him therefore that is making crucibles apply the earth to the mould, as hath been above ſaid in the firſt manner, which being done, let him again take off the crucible that is formed or caſt, and ſet it in the aire to be dryed. Then having firſt made a ſufficient number of crucibles, let him make the mould clean from the earth or ſand, and annoynt it with greaſe, or oyle Olive taken up with a ſponge, as alſo the counter-mould, into which let him put the crucible being halfe made and dryed, and into this the mould, which he muſt ſtrike above twice or thrice with a heavy wooden mallet, that the earth may be rightly, and exactly applyed to the mould; which being done let him take off the mould, and turn the counter-mould together with the crucible, which let him knock a little againſt the forme (where the crucibles are made) and let him take in his hand the crucible falling from thence; which he muſt afterwards dry and burn, as hath been above ſaid in the firſt manner. And by this way are made the beſt, and the beſt proportioned crucibles, fixed and ſmooth, not only for melting of metals, but alſo for minerals and ſalts; the like to which I never yet ſaw, as being without all danger, if ſo be rightly made of the beſt earth. And that they may be made equal in weight and ſtrength, they muſt be weighed as before hath been ſaid. And this labour is eaſie and pleaſant, when they are made with ones owne hand, and that greater or leſſer at pleaſure.

After the ſame manner alſo are made teſts *viz.* by the help of the like kinde of moulds, which muſt not be long but plain like teſts, as it appears by the annexed figure, *A.* and *B.* Not only teſts but alſo cuples are made by the help of theſe moulds.

Now teſts are made more eaſily this way then crucibles, becauſe the earth only is weighed, and being handled with the hands is put into the counter-mould, which then you muſt with the upperpart preſs hard; that it may be made conformable to the mould, *viz.* plaine, not long, that which may eaſily therefore be made; and for this cauſe thoſe crucibles are eaſily again taken out, *viz.* if the mould be turned, or the counter-mould be a little knocked againſt the ſides of the form. And if the earth be beaten in too faſt that it goes out at the ſides, you muſt cut it off with a knife, or elſe the crucible, or



teſt is hardly taken out, ſticking to the brims, that which practiſe will teach thee. For all things cannot be ſo accurately demonſtrated by pen.

And take this for a caution, that thou do not make thy teſts and crucibles of earth that is too ſoft, but of that which is half dry, otherwiſe they are hardly taken out of the moulds; for that is more eaſily and rightly applyed to the mould And if thou proceed rightly according to the preſcript, ſcarce one crucible of a hundred will be loſt.

This alſo is to be obſerved, that the ſuperfluous earth which is cut off muſt not be mixed againe to the maſs for crucibles, becauſe it is ſpoyled with the fat, or oyle that is ſmeered over the moulds, and therefore cannot be ſo well mixed againe, and being burnt cleaves, for which cauſe bad crucibles are made. Wherefore it is to be kept apart for mending of furnaces that are ſpoiled with an extraordinary heat of the fire; or for cover of crucibles that are to be made by the help of the hands only, or of moulds, which we cannot want, if we would work all things exactly.

Now for tyles, and other veſſels that ſerve for diſtillation, and melting, they are made by the help of wooden moulds after this manner. Let the mould be made exactly like to tyles, and other veſſels, then cut off leaves from the earth being very well prepared, with a copper wier upon two equal tables of wood, and then a piece of the earth is to be laid with a knife upon the mould, that it may there get ſome hardneſs; which afterward is to be taken away, dryed well, and burnt. And if any thing further is to be done, *viz.* by cutting off, or adding, it muſt be done by earth half dryed, or a little hardened. For by this means any one may get for himſelf earthen veſſels that are neceſſary, without much coſt or paines for certainty ſake. For thoſe that are ſold are negligently made, in which oftentimes in the drying cracks which are made are filled up with ſome earthen liniment, before they are burnt, which therefore are not durable in the fire, but are broken, and that oftentimes not without great loſs of the metal, which is again to be gathered out of the aſhes by the help of a tedious waſhing. It is better therefore to work thoſe veſſels with ones own hand for certainty ſake. For not all & every crucible can alwayes and every where be made equal, and be of a like durableneſs in the fire, though they are made moſt diligently: and therefore a conſideration being had of their goodneſs they may be uſed for divers uſes, and the better may be uſed in the melting of the better metals. But let no man perſwade himſelf that all theſe can indifferently hold in the fire, although they be the beſt of all, how many ſo ever you make; for I never yet ſaw any earth which could hold litharge in the fire and ſalt of Tartar, becauſe the beſt that ever I ſaw is not free from penetration of them, that which is the greateſt impediment of ſome profitable operations, which therefore are omitted.

And let this which hath been ſpoken ſuffice concerning the making of crucibles: let every one therefore that hath a care of his buſineſs uſe better diligence for the time to come in the making crucibles for more certainty ſake, and he will not repent of his labor. Now how teſts and cuples may be exactly applyed to the aforeſaid moulds is not my work at this time to ſhew, becauſe many yeers ſince it hath been done by others, eſpecially by that moſt ingenious man *Lazarus Ercker*, whoſe writings concerning the manner of making of teſts and cuples I cannot mend, to which Authors I refer the reader, where he ſhall finde ſufficient inſtruction and information concerning this matter. But there are alſo other teſts of which I ſhall ſay nothing in this place, but elſwhere happily may, by the help whereof lead is bettered in tryal if it be ſometimes melted againe.

Of the vitrification of earthen veſſels belonging to the firſt and ſecond furnace.

IN the defect of glaſs inſtruments belonging to our firſt furnace you may make ſuch as are very uſeful of the beſt earth, which being well glazed or double glazed are ſometimes better then old glaſſe, eſpecially thoſe that are made of earth that do not drink up the ſpirit ſuch as is found almoſt every where, which becomes ſtony being burnt; now the art of burning hath not hitherto been ſo well known, of which ſomething hath been ſaid already where the earth being burnt with a very ſtrong fire is made ſo compact as that it becomes hard and ſolid as a ſtone. The potters furnaces being too weak for this ſtrong burning, there is required a peculiar furnace for this work, in which the ſtrongeſt fire for the burning of them may be made; But becauſe no body thinks to build ſuch an one onely for ſome few veſſels not worth the ſpending of coſts and labors; there is yet another way of vitrifying of any ſort of earth (red clay only excepted) not to be ſlighted if well done, eſpecially if the matter vitrifying when it is cold after the burning is ended, doth not cleave and chop, and it is not hurt by corroſive ſpirits as that glaſs made of lead retaining ſpirits, as well ſubtile as corroſive, as that white vitrification of the *Italians* and *Hollanders*; you muſt therefore in defect of a fitting furnace, wherein veſſels being burnt become ſtony, make them of the beſt earth and glaze them with the beſt glaſs of tin, but not of lead; and by how much the calx of tin goes into the vitrifying mixture, ſo much the better is it made; for tin being reduced into a calx with lead, hath no more affinity with corroſive ſpirits; wherefore it is more fit for vitrification. But he that will not not be at ſo much coſts, let him vitrifie with Venice glaſs powdered, which vitrification alſo is not to be ſlighted, requiring a very great heat for the burning, and therefore flowing with great difficulty in theſe common potters furnaces; wherefore you muſt mix ſome borax with the glaſs that it may flow ſo much the more eaſily in the potters furnace. Elſe you muſt prove upon the earthen veſſels being burnt, water mixt with glaſs, ſo that the glaſs may ſtick to them every where exactly, which afterwards being very well dryed, ſhall be gathered together into one heap artificially, leſt they take up two great a ſpace like earthen diſhes that are to be burnt, and afterwards compaſs them round about every where with burnt bricks, a hole being left open above for the caſting in of coals, yet ſo that the bricks be diſtant from the veſſels the breadth of a hand, whereby the coals being caſt in above, may the more freely round about go down to the bottome: which ſpace being filled with dry coals you muſt put upon them other living coales, that the fire being kindled above, may by little and little burn downward and perform its work; which being ſo done the veſſels will be out of all danger, if ſo be they are well dryed.

The fire being kindled and burning, you muſt cover the hole with ſtones, untill the fire of its own accord be extinguiſht; the coals being ſpent and the veſſels become cold.

N. B. Now if there be a great heap of veſſels, you muſt the firſt coals being burnt, add freſh coals once more; for elſe the veſſels being placed in the midle, cannot be ſufficiently burnt, nor the glaſs ſufficiently flow; wherefore caution is required in the governing of the fire this manner, where if all things are rightly done, the veſſels are better and more truly burnt and vitrified then in any common Potters furnace whatſoever; yet with greater danger to the veſſels then in a potters furnace compaſſed about with wals. But let him that burns crucibles and other ſmaller veſſels, burn them in our melting or diſtilling furnace, being covered with coals, giving fire firſt above, for ſo I my ſelf was wont hitherto [to burn all my crucibles, and burn and glaze all other diſtilling veſſels; and this in defect of fitting furnaces is the beſt way of burning and vitrifying, where in three or four hours ſpace, the veſſels are exactly burnt and vitrified. Now the earth that is burnt quickly muſt be the beſt and durable in the fire, for fear of the breaking of ſome of the veſſels. Let him therefore in this caſe for ſecurity ſake uſe our fourth furnace, who hath built it with his chambers, in the firſt whereof he may burn and vitrifie without any danger. But that foreſaid way of burning and vitrifying, is not to be ſlighted; wherefore I would have thee be admoniſhed to be cautious in giving of fire that you give no more or leſs then you ſhould, leſt afterwards you impute the cauſe of your error committed to me whileſt the veſſels are broke as if I had not wrote the truth, but to thy ſelf that erreſt, and muſt for the future be more diligent and cautious in this work.

I know other vitrifications of divers colours hitherto unknown, and indeed moſt ſecret, not to be communicated to every one indifferently. But he that knows to reduce metals into a true glaſs, retaining the colour of his metal, is indeed the inventor of a very great ſecret, to whom if he conſider the matter more profundly, and exerciſe himſelf therein, a gate is open, with the bleſſing of God, to a greater light.

There are alſo other vitrifications, with which the earth being covered doth appear, as if it twere adorned with gems, but becauſe it is not our purpoſe now to treat of ſuch kinds; I ſhall make an end of vitrifications, onely one excepted, which yet I ſhall communicate for the ſake of the ſick and Phyſitians, and it is this.

Make little earthen cups very ſmooth and white of the beſt earth being burnt: then make the following glaſſes to flow in a very ſtrong crucible, in which dip one cup after another, being held with tongs, and firſt made red hot in ſome little furnace, letting them lye covered therein for a while, that the earth may the better attract the glaſs, which being done, let them be taken out and be ſet again into the aforeſaid collateral furnace, where they were before made red hot, when one is taken out dip another in the molten glaſs in its place, which alſo is again to be ſet as the firſt into the aforeſaid furnace; and this is to be reiterated ſo often untill all the pots be covered over with glaſs: all which being done, the furnace is to be ſhut cloſe every where, that the winde enter not into it, and ſo it is to be left untill it become cold of it ſelf, and the glaſs covering over the cups remaine intire, which otherwiſe cannot be if the cups be ſet in a cold place; now the glaſs is made after this manner.

Take of crude Antimony two parts, of pure nitre one part, grinde them well being mixt together, kindle the mixture being put into a crucible with red hot iron, and the ſulphur of the Antimony will be burnt together with the nitre, a maſs of brown colour being left behinde, which you muſt take out while it is hot with a ſpatle that it may coole, which afterwards being melted in another ſtrong crucible for the ſpace of half an hour, or an hour, makes that glaſs with which the aforeſaid cups with their covers are covered over.

Of the uſe of the aforeſaid cups.

THere is no one that can deny that Antimony is the moſt excellent of all vomitives, wherefore ſo many and ſo various preparations have been invented by Phyſitians for the taking away of the malignity thereof; whereof I have ſhewed ſome, together with the uſe thereof in the firſt and ſecond part of this book, where alwayes one is better then another; yet nothing withſtanding tis confeſt that Antimony reduced into glaſs, is ſufficient to purge the ſtomach and bowels from all corrupt humors, and that without all danger (being rightly adminiſtred) as well by vomit as by ſtoole, by which means many grievous imminent diſeaſes are not only prevented, but alſo preſently are cured.

But you infer, that this is yet a crude and imperfect preparation, and therefore not ſo ſafe. To which I anſwer, that Antimony that purgeth, needeth no great preparation, for if all the crudity thereof were wholly taken away by fixation it would no more cauſe vomiting or ſtools; wherefore the aforeſaid glaſs of Antimony is not to be feared, becauſe it is not dangerous, but may ſafely be given to children that are one or two yeers old, but not in form of a powder, but in infuſion or extraction of its chiefeſt vertue made with honey, ſugar and wine, ſweet or ſowre. After which manner being given it attracts from all the bowels all vitious humors, and evacuates them aſwel upward as downward without danger, of which thing elſewhere more at large. Let him that uſeth the aforeſaid cups infuſe one or two ounces of wine, and ſet them a whole night in ſome warm place, and the wine will attract from the glaſs ſo much as doth ſuffice it, which afterwards being drunk in a morning, doth perform the ſame as infuſion made with the powder of Stibium; and this is a more delicate way then the other, becauſe a cup is ſent to the patient that he may infuſe in it the ſpace of a night two or three ſpoonfuls of proper wine, placing it in ſome warm place, which he may drink up blood warm in the morning, with a due ordering of himſelf afterwards. Which in my judgement is a more delicate way, being made with ones own wine, and ones own hand, then that tedious way of potions both large, bitter, and nauſeous. And this cup may oftentimes be uſed, and if at length the wine ſhould not attract ſufficiently, the cup with the wine is to be ſet in ſeething hot water for a little time, that the wine might the better attract, and work, when need ſhall require. Now he that gives ſuch kinde of cups to others muſt inſtruct them concerning the ordering, and adminiſtring of the ſame. One cup is ſufficient for the maſter of a family, with his whole family for all the dayes of their life. It is not to be uſed by all and every one, and in all diſeaſes indifferently, but only by thoſe that are ſtrong and young, and where the principal parts are not hurt. Cups may alſo after another way be covered over with glaſs without Antimony, as follows.

Sublime *auripignemtum* in a glaſs or earthen gourd; and take the gallant golden coloured flowers thereof, which being after a peculiar manner melted yeeld a red and moſt beautiful glaſs, almoſt like oriental ruby, wherefore being broken in peices may be uſed in ſtead of an ornament; but this is more ſoft, and brittle then glaſs of Antimony. This glaſs or thoſe flowers of *auripigmentum*, which are not yet reduced into glaſs, do notably devitreat the aforeſaid cups with a red beautiful colour.

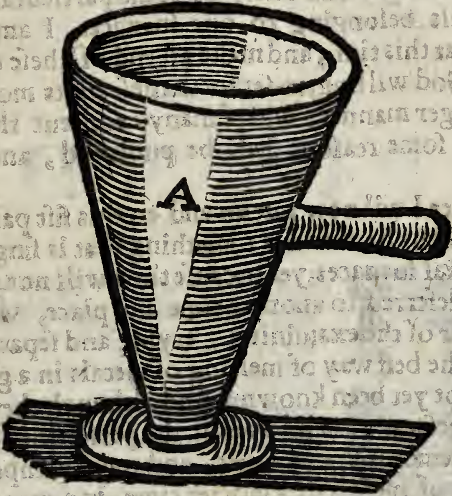
He therefore that will vitrifie the aforeſaid cups muſt firſt heat them red hot in a fire made with coals, and being thus hot dip them in the aforeſaid melted flowers, and being taken out thence put them under an earthen, or iron red hot veſſel, and there let them coole; which do perform the ſame things as thoſe which are ſaid of the Antimonial cups.

Theſe cups are not dangerous, as to be feared, becauſe as Antimony is corrected by calcination, ſo *auripigmentum* is by ſublimation: from which if all the malignity be taken away either

ther by fire, or by nitre, the vomitive vertue is taken away, as afterward ſhall be demonſtrated more at large in theſe five parts, when they ſhall come forth again with enlargements, *viz.* what purging things are, and how they put forth their vertues, a conſideration being had of their malignity.

There are alſo other wayes of vitrification, and indeed very fine, and moſt deſireable by all, if they ſhould be communicated; but becauſe it is not now my purpoſe to treat here of mechanical things, but onely of ſome particular vitrifications of veſſels belonging to our furnaces, I am reſolved to omit them at this time, and make an end of theſe things. I am reſolved, God willing, to ſet forth theſe parts more corrected, and in a larger manner, where many excellent things now omitted for ſome reaſons ſhall be publiſhed, and commuincated.

Wherefore I wil now put an end to this fift part, where although I might have added ſomething that is ſingular concerning artificial furnaces, yet becauſe time will not now permit, it ſhall be deferred to another time and place, where we ſhall treat further of the examining, trying and ſeparation of metals: For the beſt way of melting of metals in a greater quantity hath not yet been known: And although they that deal in minerals perſwade themſelves of the perfection of their art, yet I can demonſtrate an eaſier, and more compendious way of melting of metals in a ſhorter time, in a greater quantity, and with leſs coſts and paines. Of which more at large elſewhere, wherefore (Courteous Reader) be contented with theſe things, and if I ſhall ſee that theſe few things ſhall be acceptable to thee, I will ſometime hereafter for thy ſake and to thy profit communicate *wonderful ſecrets* which the world will not believe, and which hitherto are hid, either out of envy or ignorance.



A Cup or melting veſſel belonging to the fourth Furnace.

AN

AN APPENDIX.

TWO yeers ſince I began to publiſh my new invented furnaces where alſo there was mention made of ſome ſecrets, which though I thought never to divulge; yet neverthleſs I underwent many troubles for the communicating of them. Wherefore I beſeech every body that they would no more create troubles to me or to themſelves by their petitions or writings, becauſe for certaine cauſes I ſhall for the future communicate nothing but thoſe things which follow. Expect therefore patiently the time of another Edition, when theſe five parts ſhall come forth more corrected and enlarged, and many moſt choice ſecrets ſhall be communicated, which were for certain cauſes omitted in the firſt Edition.

I ſhall now God willing communicate thoſe things which follow, yet upon this condition (becauſe many are ſuch, that by means thereof thou maiſt with a good conſcience, without hurt to thy neighbour, through Gods bleſſing, get great riches) that thou be mindful of the poor, and a good ſteward of riches got honeſtly, and uſe them to the glory of God and the eternal ſalvation of thy ſoul.

The preparation of corn, as of Barley, Wheat, Oates, *&c.* of Apples, Pears, Cherries, *&c.* where fermentation being made they do yeeld by way of diſtillation a pure ſpirit very like the to ſpirit of wine without great coſts; of the remainders whereof if the matter were corn, may be made good beer, or vinegar; but if the matter were any kinde of fruit, as apples, pears, a very good drink like to wine, ſo that by this means thou maiſt finde a double profit, by which thou maiſt not onely have whereby to live honeſtly, but alſo to lay up for thy heirs.

An excellent and wholeſome drink of fruite, and corn, that is durable and like to Spaniſh, French, and Rheniſh wine.

A diſtillation of the *Aqua vitæ* of certaine vulgar things not coſtly and like to the *Aqua vitæ* of French and Rheniſh wine.

A preparation of ſugar like to the Weſterne, and of tartar like to the natural Rheniſh, out of honey and not coſtly; where one pound of ſugar doth not exceed the price of eight or ten ſtivers, and a pound of tartar, that doth not exceed the price of two ſtivers.

A peculiar purification of crude tartar without loſs, and a reduction of it into great cryſtals not coſtly, ſo as the price of one pound doth not exceed ſix ſtivers.

The taking away of the ingrateful taſt and odour of honey ſo as afterwards there may be made from thence a certain good *Aqua vitæ* retaining no more the ſmel and taſte of honey: alſo a very good Meade or Methegline like unto very good wine, with which the ſame things may be done as with the beſt wine.

A preparation of Meade out of raiſins, great and ſmal, very like in all things to Spaniſh wine; out of which alſo is made a very good vinegar without great coſts.

A preparation of wine and good vinegar of wilde grapes.

Durable and wholeſome drinks of gooſeberries, barberries, mulberries, ſtrawberries, and the like.

The mending of troubled acid muſty wines, *&c.*

The preparation of a very good vineger out of certain vegetables which are to be found every where, which may be compared to that which comes out of France, and in a great abundance, whereof two runlets of nine Gallons do not exceed the price of one Ryal.

The promoting of the ripening of wines of the cold countries of Europe (a very few that are very cold being exempted) that they may yeeld very good ſweet and durable wines, whereas otherwiſe they could come to no maturity being very like to thoſe which hotter countries yeild.

A certain ſecret way of carrying wines from mountainous places, where carts, ſhips, and other commodities are wanting, where the carrying of ten pipes, doth not exceed the price of one pipe otherwiſe carryed, ſo that by this means, outlandiſh wines may be brought to any place with great profit.

A very good and eaſie preparation of verdegreaſe out of copper, whereof one pound doth not exceed the price of ſix ſtivers.

A new and compendious diſtillation of vinegar, of which a runlet of eighteen gallons doth not exceed the price of half a ryal, with which many things may be done, eſpecially the cryſtallizing of verdegreaſe, of which one pound prepared after this manner, doth not alſo exceed the price of halfe a Ryal.

A compendious and very eaſie way of diſtilling a very ſtrong ſpirit of urine, and that without any coſt and paines, ſo that twenty or thirty pints ſhall not exceed the price of one ryal, being very excellent in medicine, Alchimy and Mechanique affaires, by the help whereof a moſt beautiful blew vitriol may be made out of copper, being very profitable in Alchimy and medicine, making ſilver ſo fuſible, that by the help thereof glaſs veſſels, as baſons, diſhes, and candleſticks, *&c.* may be ſo guilded as to be taken for ſilver.

A way of diſtilling the ſpirit of ſalt in a great quantity, and that with ſmal coſts, ſo that one pound thereof will ſcarce exceed the price of 6. ſtivers being very excellent in Alchimy, medicine & other arts, eſpecially for the doing of theſe following things, *viz.* the ſeparation of gold from ſilver without hurt to the cups or other things, alſo the ſolution and ſeparation of gold mixt with copper and ſilver by the force of precipitation, where the *menſtruum* that is preſerved, may again be uſed for the ſame uſes, which ſeparation is the eaſieſt of all other humid ſeparations, whereby gold is reduced to the higheſt degree.

The ſeparation of volatile ſparkling gold out of ſand, *&c.* very profitable, without which otherwiſe it could never be ſeparated, neither by the helpe of waſhing, nor by Mercury, nor by the force of melting.

An Artificial ſecret, and hitherto unheard of trying of ſtubborn metals finding out their tenaciouſneſs, which otherwiſe could not be found out: for oftentimes there are found golden mines, which are ſtubborn, in which nothing is found out by that common way, and therefore they are left unlaboured in, and ſometimes elſewhere, where there are not found mines of metals, there are found other things, as white and red talc, that yeeld nothing, being tryed the common way, or very little, all which yet abound with gold and ſilver which may be ſeparated this way.

A new and unheard of compendious way of melting mines in great plenty, where in the ſpace of one day by the heate of a certaine ſeparating furnace, more may be melted then by the common way in the ſpace of eight daies, where not onely coſts are ſepared, but where alſo is hope of greater gaine.

Another way for the better proving of things melted, and a new way of ſeparating ſilver from lead.

A very ſpeedy way of melting minerals, whereby they are melted in great plenty, by the help of pit coals, in defect of other coales.

The fixation of minerals, ſulphureous, Arſenical, Antimonial; and others that are volatile, which cannot be retained and melted by the force of fire, by the help of a certain peculiar furnace with a grate, ſo that afterwards they may by infuſion yeeld gold and ſilver.

The melting of gold and ſilver, that ſparkles, and is rarified, out of ſand, pure clay, flints,&c. by the help of melting.

The ſeparation of gold lying hid in baſer minerals and metals moſt profitable, which cannot be done the common way.

A very quick Artificial and eaſie ſeparation of melted gold and ſilver by the help of fuſion, ſo that in the ſpace of one day, by the help of one furnace, ſome hundreds of Marks may be ſeparated with far leſs coſts and labour, then that common way by cement and *Aqua fortis.*

The reduction of elaborated gold of chaines and other ornaments unto the higheſt degree; alſo the ſeparation of gold from guilded ſilver, by the help of fuſion, by which means a hundred marks are more eaſily ſeparated then twenty of the common way.

A certain way whereby more ſilver is ſeparated from lead then by copper.

A ſeparation of good gold from any old iron, which although it be not a labour of great gaine, yet it is ſufficient for thoſe who are contented with a few things.

A ſeparation of gold and ſilver, from tin or copper, according to more or leſs. The maturation of mines, ſo that they may afterwards be able to yeeld more gold and ſilver, then by the common way, alſo the ſeparation of gold and ſilver out of Antimony, Arſenick, and *Auripigmentum.*

The ſeparation of the external ſulphur of *Venus*, that the ſon *Cupid* may be born.

The ſeparation of ſilver from the cuples, into which it enters in the tryal without melting or any other labour or coſt.

The preparation of divers earthen things to be done in any part of the world; like to the Porcelane, that hold fire and retaine ſpirits.

A certain Allome exalting and fixing any colour, eſpecially requiſit for ſcarlet and other pretious colours, with a certain prepetual cauldron, that doth not alter colours, and is not coſtly.

A making of colours for painters, as of purple gum, ultramarine, not coſtly, and eſpecially of that rich white, never before ſeen, like to pearl and Margarites, alſo a peculiar colouring of gold and ſilver.

FINIS.

A Preface to the Reader.

WHAT moved me to annex an Appendix to thoſe five books of my Philoſophical Furnaces, *you may preſently ſee in the entrance thereof, which therefore I accounted ſuperfluous to repeat. Moreover my aime was to declare to the world, how great, and hitherto unknown, and moſt profitable ſecrets God hath reſerved for this age for the ſuſtaining of our life, not doubting, but to provoke, and excite many perverſe men to a due thankfulneſs to God. But the contrary fals out: For the Appendix which you have ſeen hath begot great admiration in many, as well learned, as unlearned, that God ſhould reſerve ſo great and hitherto unknown ſecrets to be revealed to this age, who therefore have given God thanks. But others, and indeed very many, have according to their uſual manner derided the Appendix, and have proclaimed the contents thereof for things impoſsible and lyes, whereof even ſome that are ſcornful, and ſlanderous (being ignorant of nature and art) have broke forth into theſe words. It is a wonder that* Glauber *doth not teach how to make bread of ſtones, ſince he hath taught the poſsibility of making wine out of water, that husbandmen for the future may not be at ſo great labors. Such ſort of cavillations as theſe, men have ſuch deviſed in their meetings, whereof ſome would ſeem learned and wiſe, who by* *reaſon of too much wiſdome* (folly) *know not themſelves, who indeed are blockiſh, unlearned, rude, and proud aſſes, although puffed up, deſpiſing others far more skilful; whoſe ignorance I do ſo much admire, as they do my writings, ſeeing now with open eyes the reaſons of many mens ſilence, to whom God hath given a ſingular knowledge of natural things, who left nothing to poſterity. But it matters not much,* For it is impoſſible to pleaſe all; *as experience can witneſs from the beginning of the world till this day, wherefore there is nothing ſtrange. But how ever it be, yet it is no wonder that any one ſhould take it ill that the ingratitude of wicked men ſhould be a reward of his labours, as alſo their cavillations and contumelious reporting of mens writings to be falſe and lyes. Why doth not* Glauber, *if he had the knowledge of ſo great things, of which he made mention in the Appendix, make himſelf rich, but lives in idleneſs? Therefore they are nothing but vaine dreams. Thou doſt judge very excellently of colours, which thou never ſaweſt, to whom I am not conſtrained to give an account of my idleneſs; of which if thou hadſt asked me, without doubt I had given thee ſatisfaction, and had prevented thy fooliſh cenſure. But ſuch kind of men betray their own ignorance of things that are to be performed by fire; for he that goes about to catch fiſhes, doth not caſt his net upon the mountaines, but into the water; ſo he that gets his living in metals muſt needs be converſant in theſe places where metals are found.*

Now that I have lived in theſe places ſo many yeers with diſprofit beſides my will, hath been a hindrance to my fortune, which elſwhere, where I might have operated, perhaps might have happened to me. But it is better to poſſeſs a few things in peace, then many things in the hazardouſneſs of a dreadful war. But now I am fully reſolved, whether that moſt deſired peace of Germany *ſucceed or no, to betake my ſelf to ſuch places, where I may have opportunity to handle coales and mines; which when I have done, let cavillers, if they will, enquire, whether I do any thing, whereas indeed in this place I was not minded to attempt any thing whereby to be rich, by reaſon of inconveniences: For in this place I had enough to do, all things being dear, to get an honeſt livelyhood, and to ſearch into the ſecrets of nature for thy good, and to make experiment in leſs things, greater being neglected. Hence the cauſe of my ſlothfulneſs will appear to thee; wherefore do not thou any more judge raſhly, but minde thine own affaires, aud let other men alone. And this* *is the cauſe of explaining the Appendix which was made not for the general and univerſal communicating of thoſe ſecrets, the knowledge whereof (as you may gueſs) is not ſo eaſily to be attained to, but for the demonſtration of the truth, that toyes and and trifles may no more be eſteemed by the incredulous and ignorant, but the profitable ſecrets of nature (the inventor whereof I can boldly pronounce my ſelf to be) prized, and received by all, and every one.*

Wherefore from the beginning to the end I ſhall treat of each of them briefly, and ſhall give the explanation of each, as far as I may without prejudice, that they may be received not for dreams, but for natural ſciences, certaine, and moſt profitable; for the confutation ſake of cavillers.

Annotations upon the Appendix of the *FIFTH BOOK.*

PARAGRAPH I.

A preparation of corn, wheat, barley, oates, &c. alſo of pears, apples, cherries, and other tree fruits, to be performed by the help of a certain fermentation, whereby through the help of diſtillation they yeeld a very good and moſt pure ſpirit, very like to that which is made of the lees of wine, without great coſts: where alſo from the remainders of the corn (the burning ſpirit being drawn off) may be made a very good beer or vineger; and of the remains of the fruits a very good drink like to wine. Whence there is a double benefit, ſo that any one may not only have from thence wherewith to live, but alſo to lay up.

THis Art hath appeared to many very ſtrange, of which no man yet hath made mention. Some having knowledge of the common diſtilling Art, have thought that that which is to be diſtilled, having a burning ſpirit is to be put into a ſtill, yeelding all its ſpirit in the fire, nothing thereof being left in the remainders: This is to be aſcribed to their ignorance, they not knowing to give an account of their operations, operating only out of uſe and cuſtome things which they have ſeen & heard, not conſidering with themſelves, that there may be given a better or nearer way of diſtilling of ſpirits; with whom I will not contend, but only ſhew in brief, which way all kindes of corn, and fruits being diſtilled yeeld more ſpirits then that common way, or at leaſt how, the ſpirit being abſtracted, ſomething may be made of the reſidue of the matter, being equall in the price to the matter diſtilled, ſo that by this means the burning ſpirit may be had almoſt for nothing: and it is done after this following manner. It cannot be denyed, that all vegetables whatſoever, as all kinds of corn and fruits, alſo graſs it ſelf, being prepared and fermented, yeeld a burning ſpirit more or leſſe in quantity and quality, *viz.* a conſideration being had of the maturity, or immaturity, fatneſs or dryneſs of them. For thoſe things which are fatter, and ſweeter, yeeld more ſpirits, then things which are unripe, ſowre and dry; for by how much more the ſubjects are dry and leſs ripe, ſo much the fewer ſpirits doe they yeeld, and that not before fermentation, which gives them ſuch a maturity as to make them yeeld their ſpirit in diſtillation, which otherwiſe they would not doe. Hence therefore it doth neceſſarily follow that fermentation is the onely cauſe of the burning ſpirit, and by conſequence the onely *Medium* whereby plenty of ſpirits are obtained; *viz.* if the things be rightly and well fermented, whereby they are ſo qualified as to be able afterward to yeeld their burning ſpirits the more eaſily; which by how much the better they are fermented, doe yeeld the more. But ſeeing that common fermentation is not ſufficient for the totall elevation of the burning ſpirit, it comes to paſs that the beſt part thereof is left in the ſtill, which hitherto by reaſon of ignorance hath been uſed to no other purpoſe then to feed hogges, which is ill done, for the matter that is left ought firſt to have loſt its fatneſs, and that either by diſtilling of more ſpirits, or by the making of beer or vineger, before the reliques be caſt to Hogges; whence there comes a double profit to the operator. But you muſt not be ignorant that for this operation you muſt not make choice of any common Cauldron in which fruits are uſed to contract an *Empyreuma*, *viz.* an ungratefull taſt, and ſmell, but

another

another certain inſtrument of the ſame Nature, which wil hinder and not permit the aduſtion of the matter which is to be diſtilled, though it be thick, by the help whereof there is obtained a very ſweet ſpirit, & in a great aboundance by the help of our ſecret fermentation. And ſo thou doſt underſtand the reaſons, by the help whereof more, and ſweeter ſpirits are obtained from corn, and fruits (whence a double gain) *viz.* by the help of a certain veſſel or inſtrument, and of our ſecret fermentation.

PARAG. II.

The making of wine not unlike to Rheniſh, French, or Spaniſh, that ſhall endure for the ſpace of many yeares, out of corn and fruits.

IN this Paragraph the matter is otherwiſe then in the firſt; for in the firſt is ſhewed how out of corn, and fruites are drawn ſpirits, both more and better then by that common way; but in the ſecond, how out of thoſe may be made a drink like to naturall wine, of divers kinds, colors, taſtes, and odors; according as you pleaſe, and indeed like to Rheniſh or French wine, for ordinary drink, or to Spaniſh, being ſweeter and fatter then that; alſo ſuch as ſhall be durable for many years, and ſerve for the ſame uſes to which naturall wine is appointed: ſo as that there can ſcarce any difference be perceived. Which indeed is a moſt excellent and profitable Art, becauſe clear wine is deſervedly preferred before muddy beer. But thou wilt ſay that that beer which is made of corn, although it be like to wine, *viz.* in colour and taſt, yet it is not true wine, as not being made of grapes, but rather cleer beer of a good taſt. But know that I am not the firſt that put the name of wine upon drinks that reſemble wine in odour, taſt and colour. For that expreſſed juice of pears and apples is called new wine, or the wine of pears and apples, and that not without cauſe; for if any individuall things agree in all and each property, why may they not be called by one and the ſame name? Is not that burning ſpirit which is drawne out of corn every where called the wine of corn; which if men knew (as they know not) how to prepare, it would be like in all things to ſpirit of wine, that which no body yet beſides my ſelfe, as I ever knew, could do. Where let no man judge this ſecret to be impoſſible, but rather let him conſider the matter profoundly, or enquire the truth of the thing of thoſe who know it, and he will find it to be an Art moſt excellent and uſefull for the preſerving of life. If any one could in cold countries that have no wines, make out of corns, and fruits, a drink like wine, cleare, wholeſome, well relliſhed, and laſting, would he not do a thing that would be acceptable to all? Truly although men would chooſe for their drinking muddy beer as an accuſtomed drink, yet that would be more acceptable for the comforting of the old and weak. Beſides alſo there is made out of the ſame wine a very good and clear vineger, better then that which is made out of beer. Although thou ſayeſt that that making of wine, *viz.* out of peares and apples is a very common thing, and that theſe wines may in ſome qualities agree with thoſe naturall that are out of expreſſed grapes, yet in ſome they doe not, becauſe they will not laſt above halfe a year, or a yeare, but will be corrupted; and that vineger made thereof is not durable, but corruptible, and will grow red and contract a ſlimyneſs; and therefore for goodneſs not to be compared with thoſe expreſſed out of grapes: To which I anſwer, I confeſs that this wine made out of apples and peares, is not comparable to that which is expreſſed out of grapes. For apples, and pears, and other fruits of trees want ſome qualities which grapes have; and on the contrary have ſome qualities which grapes have not; which being taken away, and thoſe added, they yeeld a wine in all things comparable to that which is expreſſed out of grapes: Such as I have alwayes by me for my ordinary drink, being drunk of many for Rheniſh wine, being better then that French ſulphurated and ſophiſticated wine. Wherefore this is a very profitable and excellent art, not only for countryes that lack wine, but alſo for thoſe that abound with it: For in any place of the world corn is had and tree fruits are had, yea even in the coldeſt countries, out of which a very good wine may be drawn, which may be uſed inſtead of dearer wine, that is brought from other places, or is made at home with greater coſts; for grapes are propagated with greater coſts, then corn, and tree fruits, whereof ſome alſo are had for nothing, & are produced in all places, in fields, and every where with manuring; whereas grapes require the beſt manuring, and a due heat of the Sun, and other labors. I was brought up in *Franconia*, a country abounding with wine; where the moſt common drink of moſt that keep vineyards is water, for they ſell their own wine for to buy neceſſary things, becauſe wines require a great care, and diligence, through out the whole ſummer, which if it be hot, yeeld better wine then if otherwiſe, and dearer, which is ſent into other countries that have no wine. It is very little that thoſe that keep vineyards reſerve for themſelves for recreation ſake: but when the coldneſs of *May* ſpoils the buds; or a blaſt in *June* the flowers, or hail the grapes when almoſt ripe (that which often happens in mountainous places) then they have little hope for the preſent, being conſtrained for the future, to dreſs vineyards for a livelyhood, who are oftentimes forced for the avoiding of poverty, to ſell one vineyard that they may manure another, or elſe to borrow money which they muſt return with intereſt in the harveſt. What counſell then ſhall I give them in caſe there ſhould be a ſcarcity of ſome yeares? Wherefore I teſtifie that thoſe Vinedreſſers are for the moſt part very poor, and drink water and not wine, which they are wont to make for others; but others who are wel monyed, and are able in the time of great ſcarcity, to dreſs their vineyards become richer, lending or putting their money to uſe to the poorer, &c. Now that this Art of making wine is very profitable, not only for countries that have no wine, but alſo for thoſe that abound with wine, I will thus prove. Moſt of thoſe places that have much wine want beer, wherefore the rich drink wine, and the poor are conſtrained to drink water, or ſuch drink which is made out of expreſſed grapes, & water, with which they quench their thirſt in ſummer time, becauſe neceſſity of buying things to eat, forceth them to ſell the wine, and forbids them to drink it. Who if they knew how to make this kind of drink of pears & apples which are every where had there in woods in great aboundance, they might refreſh themſelves a whole yeare therewith, and ſell their own native wine to buy neceſſary things therewith: which art being unknown they muſt be content to drink fountain water, &c. Perhaps thou wilt demand whether thoſe places have any corn, out of which they may make bear. Truly they have aboundance, but the Inhabitants care not for beer, the poor whereof had rather drink water, that is clear and pure, then beer that is as muddy as horſe piſs, being without doubt mindfull of that German Proverb, *Eat things boyled, drink things clear, and ſpeak things true, that thou mayſt live.*

Let theſe things therefore which have been ſpoken and demonſtrated concerning the poſſibility of the art of making wine out of corn and fruit, in any place of the world, ſuffice, &c.

PARAG. III.

A making of a burning ſpirit out of the baſer ſort of things which are commonly known, like to that made out of Rheniſh and French wine, and at an eaſie rate.

THis Paragraph needs no long demonſtration, becauſe you may eaſily underſtand it out of what hath beene already ſaid, which are very like to thoſe things which are ſpoken in the third Paragraph, of which you need make no doubt, but take them for truths.

PARAG. IV.

The making of ſugar (like to that of Weſt-India) and of Tartar (like to the Rheniſh) out of honey, not coſtly: ſo that the price of one pound of ſugar doth not exceed 8 or 10 ſtivers: and a pound of Tartar exceed not the price of 2 ſtivers.

THe poſſibility of this operation will eaſily appear to him that ſhall rightly conſider the Nature, and properties of honey. For there is a great affinity betwixt ſugar and honey, as it appears by the ſeparation of the principles of both, of which it is not now my purpoſe to treat, but only to demonſtrate the poſſibility of the Art. Sugar is a certain ſweet juice found in a cane or reed, like marrow, where being maturated in hotter countries by the heat of the Sun, it is cut off, broken in a mill, and preſſed forth, being not unlike in colour to brown honey: which afterwards is purified and clarified, and being clarified is carryed from thence into *Europe*. So alſo is honey a certain ſweet vegetable juice attracted by Bees out of the flowers of trees, and other vegetables growing in medows, and fields, and gathered together with a great deale of diligence for their livelihood: reſembling for the moſt part courſe and crude ſugar, but yet a little impurer, and cruder then ſugar, as experience can teſtifie. The matter being ſo, why may not honey be by Art purged from all impurities, and be made like to ſugar? Is not ſugar oftentimes uſed in Apothecaries ſhops in the place of honey, and honey in the place of ſugar, *viz.* in the preparing of ſyrops, and Conſerves, becauſe there is no difference betwixt them, then that ſugar is naturally a little purer then honey, and of a more gratefull taſt? but the unpleaſantneſs of the taſt of honey is eaſily taken away, ſo as that it may be made like to honey in all things. Which art at length without doubt will become known to the world, (with the help of theſe my writings) *viz.* the making of ſugar out of honey, that we need no more obtain it at ſuch great coſts.

As for the making of Tartar out of honey, we need not doubt of the poſſibility thereof, as neither of the making of ſugar thereout; but this ſeemes more probable then that; becauſe both are ſweet, *viz.* honey and ſugar; but tartar not ſo, being hard and acid; wherefore I will demonſtrate the poſſibility thereof by a few certain ſimilitudes, and examples, beginning with the example of new wine that is ſweet in the beginning before fermentation, which by decoction is inſpiſſated, and reduced to the conſiſtency of a thick ſyrop, like to honey and ſugar in taſt; which being kept in clean earthen veſſels, or rather glaſſen, yeelds of its own accord in proceſs of time an eſſentiall proper ſalt ſticking to the brims of the bigneſs of egges, like to red ſugar candy; the fæces being left apart, together with the reſidue of the ſugar, which by reaſon of its too great filthineſs could not produce cryſtals: This is not inferiour in ſweetneſs to the Indian ſugar, that grows in Canes, which ſweetneſs being alterable by fermentation is converted into acid Tartar. In this example there is given to us by nature an opportunity to conſider better of the poſſibility of this Art, whileſt ſugar is made of new wine, by taking away the filthineſs and ſuperfluous aquoſity thereof. The ſame alſo is apparent in raiſins (grapes dryed by the heat of the Sun) in which there is found corned ſugar, if they are kept for the ſpace of an year, like to that which is produced in new wine inſpiſſated: Wherefore good houſewifes in countries that abound with wine are wont often to inſpiſſate their new wine to the thickneſs of honey, which they keep for the ſpace of a year, and uſe in meats and drinks. The ſame is done with ſweet pears and cherries being bruiſed, expreſſed, and inſpiſſated to the conſiſtency of honey, which being reſerved for the ſpace of ſome years, yeeld a ſugar as muſte doth: the purer part whereof oftentimes in defect of ſtrong earthen veſſels penetrates the pores of thoſe that are infirm, *viz.* the eſſentiall ſalt ſticking to the outſide of the earthen veſſell, coagulated and cryſtallized, moſt beautifull, and very white even as the pureſt ſugar, becauſe the pureſt part only penetrates the porous earth, the fæces being left behind in the pot. Hence therefore it appears that every ſweet vegetable, and every ſweet juice yeeld a ſalt as ſweet as ſugar, which ſweetneſs is converted into Tartar. Why then doſt thou make any doubt of honey which is more pure then thoſe expreſſed juices? But thou ſayſt that the converſion of honey into ſugar is indeed probable becauſe the ſame thing happens in other inſpiſſated ſweet juices, that are of affinity with ſugar in ſweetneſs, but not the converſion of it into Tartar, becauſe Tartar is an acid ſalt, but ſugar ſweet, and therefore they cannot come from one and the ſame root.

I anſwer, the cauſe of incredulity is the ſtupidity of the brain, which if it were ſo porous as the womens pots penetrated by the ſugar of the new wine, without doubt a belief of the poſſibility would finde entrance into it, and that in as great a plenty as the ſugar that ſweats out of the pots. Behold now thy long aſſe eares, which thou canſt not cover, and thy little underſtanding of naturall things! What advantage is it to contradict the truth with ignorance?

Now I will tell thee how an acid tartar may be made out of ſweet things, and that not for thy ſake (who art wiſe only to thy ſelf to the deceiving thy ſelf, and others) but for their ſakes, who are not aſhamed to learn. Conſider that new ſweet wine is preſſed out from grapes, and that moſt ſweet ſalt comes from thence by the help of inſpiſſation, which is made by evaporating the aquoſity, which not being ſeparated, there is by fermentation produced plenty of Tartar; the cauſe of the ſeparation of which is nothing but the fermentation, congregating the purer parts, and ſeparating the thicker. But thou doſt yet further demand, whether this be to be aſcribed to fermentation only, that ſweet things produce tartar, and wherefore it is not produced in water dulcified with honey and ſugar, *viz.* Mead or Metheglin; in whoſe veſſels is never found Tartar; wherefore thou concludeſt that it cannot be done by any common fermentation. Now thou doſt rightly urge; but that is not a vulgar or common fermentation, by which that Tartar of Hydromell is obtained, becauſe by that operation the ſeparation of tartar cannot be: wherefore ſuch kinde of drinks are unwholeſome, and ungratefull, and laxative, although old, becauſe nothing is added to the honey that may cauſe that ſeparation. For he that knowes not how to make Tartar out of honey cannot alſo make wine thereof. But I may not now publiſh that ſecret by the help whereof theſe things are done, but it muſt a little while be reſerved for friends untill the time (in which all things are changed) of revelation ſhall draw nigh. In the mean let the demonſtration of the poſſibility ſuffice. I had truly ſooner attained to this Art at the firſt, if any one had given me ſo much light: And becauſe I never could read or hear any ſuch thing,thou mayſt eaſily conjecture, what great coſts,and what great labours I underwent for this things ſake.

PARAG. V.

A peculiar purification of vulgar impure Tartar, without any loſs, and the cryſtallizing or reduction of it into great cryſtalls, a pound whereof being purified doth not exceed the price of 6 ſtivers.

THis Art conſiſts only in a convenient precipitation, whereby together, and at once all the muddineſs is ſeparated from the diſſolved Tartar. Wherefore nothing or little is loſt; and therefore Tartar is eaſily converted into great cryſtals.

PARAG. VI.

The taking away of the ungratefull odour,and taſt of honey, which being taken away there is drawn forth out of the honey a very good burning ſpirit which ſavours not of the qualities of honey,and alſo a hydromel like to naturall wine in taſt and other vertues,&c.

THis ſecret alſo conſiſts in the precipitation of the ſuperfluous muddineſs, and ungratefull odour. Whereby the honey obtains a gratefull taſt,and odour,ſo that from thence may be made a good wine and vineger.

PARAG. VII.

The making of a hydromell,very good and clear, out of Raiſins, both greater and ſmaller, reſembling the beſt Spaniſh wine; out of which alſo is made a very good and clear vineger.

RAiſins are nothing elſe but ripe grapes dryed, which in *Spain*, and other hot countries are cut off in a juſt ſeaſon, and are dryed upon warm Earth, and being dryed are ſent into *Germany*, and other countreys; which in their nature and property are nothing elce but the juice of grapes dryed in the husk, for the aquoſity whileſt they are in drying, leaves in the husk a ſweet juice, as the ſugar or eſſence of grapes; which being loſt by the heat of the Sun, the humidity may be reſtored again by other water, ſo that wine may be made thereof; that which hath been tryed of many, who have poured upon raiſins whole or cut, warm water, and fermented them in a tub or other veſſel, that by this means they might obtain Spaniſh wine or Sack: but it hath not ſucceeded according to their expectation, for they have not got wine, but a certaine ſweet liquor; becauſe the raiſins in drying have aſſumed another nature, by reaſon whereof they cannot yeeld ſuch a wine as thoſe that are new are uſed to do. Wherefore hitherto the making of ſack out of raiſins hath not been known, like to that which is made out of new grapes, which is now found out. It is beleived by many that raiſins by the pouring on of water, recover that which departed from them in the drying, and therefore that the making of wine out of them is poſſible, like in vertue and taſt, to that which is made out of new grapes. But this is not done by the common way, but by another, *viz.* by the help of a certain precipitation, or taking away of the taſt of the raiſins, by the promoting of fermentation, and ſeparation of the heterogeneall parts. For it is not any peculiar Art to make a certain ſweet drink out of raiſins by the addition of water after that common known way, which cannot undergoe the proof of true durable wine; but being not yet clarified by the fermentation that is made, doth by little and little grow ſour, that which good *Spaniſh* wine (although that grow ſowre before others) doth not, being durable for the ſpace of ſome years, if it be rightly ordered. Wherefore becauſe thoſe wines made after that common way out of raiſins, are not durable (as experience can witneſſe) the making of them was afterward neglected, becauſe of an opinion which men had of the impoſſibility thereof; which fault is not to be imputed to the raiſins, but to the Artiſt; for if in the drying nothing but the inſipid humidity evaporate

rate, all the goodneſs being left in the raiſins, why ſhould the making of wine out of them be impoſſible by reſtoring of a humidity like to the naturall? But the ſtrong taſt of the raiſins which is got by drying which no one can take away hinders it: But in caſe any one knew how to doe it, he ſhall not be able only to make thereof a *Spaniſh*, but alſo a *Rheniſh* wine. But thou wilt ask, how can *Rheniſh* wine be made of *Spaniſh* raiſins; which being new yeeld only a ſweet wine? The anſwer is given in the preceding Paragraphs, where the poſſibility of making divers kinds of wines out of any ſweet matter is demonſtrated.

I dare devoutly affirm that I have ſometimes made out of thoſe common raiſins, and honey, ſweet wines, which have been drunk by moſt for *Spaniſh*. No more therefore of this thing which will be confirmed by experience.

But I ſhall ſay this in the place of concluſion, that if thou didſt know to take away the ungratefull taſt and odour of hony, thou mayſt in any place of the world, where honey is to be had, or ſweet pears, make good ſack, or haply any other, as Mallago, or that which is called the wine of *Simon Peters Mount*, *viz.* without raiſins becauſe the matter of them is to be had in every place. Theſe kinds of wine yeeld alſo a white, cleer, and very ſharp vineger, and indeed better then the *French*, and *Rheniſh*. Such kinds of wines may alſo be made all the year long, ſo that thou needſt not be tyed to any certain time of the year; that which is a great profit for thoſe, who every year have a great loſs of wine.

PARAG. VIII.

How good wines, and good vinegers may bee made in thoſe places, where grapes grow in unmanured placs, and are acid.

THis ſecret alſo is very profitable; grapes indeed may be planted in colder places, but not coming to a maturity, cannot yeeld good wine, being immature and ſowre; witneſs *Germany*, where oftentimes in a cold ſummer ſeaſon, as alſo in other places otherwiſe hot, not attaining to a ripeneſs yeeld a thin and acid wine, wherefore alſo oftentimes the maſters of the vineyard ſuffer great loſs, not knowing how to ſell their wines, not being worth tranſportation,being left for themſelves to drink, or for another year to be mixed with better for the better ſelling of them, and indeed not without great diſprofit to them: for if there follow a barren yeare alſo, they know not how to help their ſowre ſpring wine; and if there follow a yeare fertile enough, producing ſweet grapes, yet thoſe wines cannot wanting their own proper goodneſs, be ſold,wherefore they cannot adde any goodneſs to the ſowre wines of the former year, their own being ſcarſe ſufficient for them. Wherefore thoſe have need of a very good helper, which yet they have not found; For I have often had experience for the ſpace of many yeares, of the various corruptions of thoſe wines being loſt. Alſo it often fals out that the vinedreſſers doe in a bad harveſt chooſe only the better grapes,the worſt being left on the wine,to their great diſprofit, who if they knew how to take away the ſowreneſs of the unripe grapes,would not without doubt caſt them away thus. For ſowre wine being expreſſed from unripe grapes,may eaſily be corrected and amended, ſo as to be taken for the beſt, that which I know by my own experience, *viz.* that very good wine may be made out of unripe hard grapes being pounded, and preſſed, like to *Rheniſh* in the judgement of all.Let others alſo judg of the excellency of this ſecret, by the help whereof,not only in colder places,where wine cannot at all come to maturity, but alſo in hotter countries by reaſon of the inclemency of the air,may be ſo corrected and amended by helping the unripe grapes,that it becomes to be the beſt and moſt excellent,which being known to many it may be ſo helped, that afterwards they may ſell wines corrected by their Art ſo much the better. Moreover unripe grapes growing natural in vineyards unmanured by reaſon of the diſtemper of war, left upon the vines, and otherwiſe unprofitable,may by the help of this Art be corrected and bettered,as to yeeld good wine. This Art therefore, if it be practiſed is very good and profitable, yet not to be communicated to all, and each indifferently, becauſe it may being publiſhed be helpfull to enemies as to friends: wherefore it is rather to be concealed, then to be revealed to the diſprofit of others, untill it ſhall pleaſe God at laſt to have it done. Let this ſuffice therefore to have been ſaid of the poſſibility therefore.

PARAG. IX.

Alſo the preparation of wholeſome drinks out of Gooſeberries, Barberries, Mulberries, and other wild fruits.

THis refers it ſelf to the ſecond, and 8 Paragraph: for the ſame Art which makes for the maturation of immature grapes ſerves alſo for this buſineſs, and it is one and the ſame proceſs on al ſides, only one excepted, which is the correcting of that wild odor of thoſe wild fruits, which is not in grapes, for which cauſe grapes are to be preferred before thoſe; but thoſe before theſe for the aboundance of them in every place; and theſe alſo may be planted ſooner, and eaſier then grapes, which cannot be propagated in unmanured places. For if any ſprout of one or two ſpans, of gooſeberries, or barberries, be ſet in the earth in the ſpring, it can produce fruits the very ſame yeare, even in cold countries, and unmanured places: yet a fatter place produceth fatter, and greater kernels, and fruits.

PARAG. X.

The correcting of troubled, viſcous, wines, and ſuch as begin to be red, muſty, and ſowre.

THis Paragraph ſeems to be of no moment, yet vintners cannot well be without this ſecret. For we often ſee that whole buts of wines are ſpoiled, and contract a viſcouſneſſe, redneſs, filthineſs and ſtink. Are ſuch now to be caſt away? No; for it would be a great loſs, but we may help them by medicaments, as we doe ſick men. If therefore thou chance to have ſuch wine, thou muſt precipitate all its filth, and within a few dayes it will recover all its ſormer goodneſs, color, and clearneſs. Alſo that which begins to be ſowre, and is not yet turned to vineger, may recover its former goodneſs; *viz.* being helped by due means: but that which is too acid is rightly turned into vineger which no one can want, and that without loſſe.

PARAG. XI.

A very eaſie making of vineger in great quantity out of certain vegetables, that are every where to be had, viz. *very good, clear, and durable, like to French vineger, &c.*

THis is a very excellent ſecret, by the help whereof very good and durable vineger may be made in any place of the world out of certain vegetables, and that in great quantity, and with little coſts. And this ſecret is for thoſe great Sea Mart-towns, where there is great trading, whence with great gain, it may be carryed into other Provinces.

PARAG. XII.

A production of wines in cold places, which otherwiſe by reaſon of the cold air doe not bring forth wines, (the coldeſt places of all only excepted) viz. *of the beſt, ſweeteſt, odoriferous, and durable, not giving place for goodneſs, clearneſs, ſweetneſs, durableneſs, to thoſe that are made in Germany, France, Italy and Spain.*

THis ſecret agrees almoſt with 8 or 9, but this here is required in the firſt place, that the Vine-dreſſer apply to the root of the Vine, that is to be helped, a nouriſhing, comforting and fructifying medicine, which may alſo preſerve it from the cold, which is neceſſary for the production of grapes; which although they doe not attain to a maturity may yet afterwards as well as in the fermentation be perfected, ſo as you may have very good and excellent wine from thence.

PARAG.

PARAG. XIII.

A certain ſecret, by the help whereof wines are eaſily tranſported from mountainous places, remote from rivers, and deſtitute of other conveniences of carriage, ſo that the carrying of ten veſſels is of a cheaper price then otherwiſe the carrying of one.

THis Paragraph offends many, as well learned as unlearned, ignorant of ſecrets, judging the thing impoſſible, and nothing elſe but dreams and fancies. Which comming to my ears made me repent of what I had wrote, becauſe I have created to my ſelf divers troubles, and the contradictions of many: Yet I was comforted again, conſidering, that this is the faſhion of this perverſe and ignorant world, being wont to carp at honeſt men, and their knowledge. Many judge this thing incredible, becauſe of the want of winged Carts, that need not horſes, confirming one the other in unbeleife, leading one another after the manner of the blind, by the hands, and concluding the impoſſibility thereof. But wherefore I pray thee doſt thou judge ſo perverſly? for if thou waſt maſter but of one ſecret before others, thou wouldſt not judge ſo raſhly, but rather wouldſt judge of things unknowne to thee, as not to be contemned; for it is the manner of detractors to ſeek their own glory, deſpiſing the opinions of others, who if they were not blockiſh and ſluggiſh, need not play the Paraſites and Sycophants, being crafty appendixes of Courts, doing all their buſineſſes cunningly, whoſe miſfortunes are not to be lamented, being aſhamed to learn, and to handle coals. But to my purpoſe that I may demonſtrate the truth. New wine decocted, and inſpiſſated before its fermentation loſeth nothing of its vertues, beſides an acid inſipid humidity, as experience teſtifies, when as yet when fermentation is made, feeling heat loſeth its burning ſpirit, *viz.* its better part, the inſipid and unprofitable being left behind, as you may ſee in the diſtilling of wine. It follows therefore, that new wine aſſoon as it is preſſed forth, muſt before its fermentation be boiled to the conſiſting of honey, but not after that tedious way in a cauldron, which gives an ungratefull taſt to the new wine, but in a certain peculiar ſecret veſſel. The humidity being evaporated there remains the eight or tenth part, which reſembles honey in its form, in which all the vertue lies. Which juice being thickned, and brought into a narrow compaſs, and ſhut up in a veſſell may more eaſily be tranſported into other places, then thoſe ten parts not inſpiſſated, the carrying or tranſportation whereof is not only far dearer, but alſo oftentimes is ſuſpected of being ſophiſticated by the wagoners, mixing water with the wine.

That inſpiſſated juice being tranſported to other places is turned into wine, if it be diſſolved in a ſufficient quantity of water, *viz.* as much as went from it in the decoction or inſpiſſation, or in a leſs quantity, if thou deſireſt a ſtronger and better wine, and being diſſolved is put up into the veſſels to be fermented.

Not only one kind, but divers kinds of wines may be made out of new wine inſpiſſated, *viz.* according to the different quantity of water, that is to be mixed with it, and indeed not without great gain, ſo that we need not that tedious & coſtly tranſporting of outlandiſh ſweet wines, out of *France, Spain,* and *Italy.*

N. B. that the new wine is not to be inſpiſſated in a cauldron, by reaſon of the ungratefull odour, and taſt, which it contracts thence, or aduſtion. But there is required a certain peculiar precipitation, by the help whereof that yellowneſs, and taſt contracted in the decoction of the new wine is ſeparated for clarification ſake: without which two ſecrets, *viz.* the ſecret decoction and precipitation, or clarifying in time of fermentation, good wine cannot be made. He therefore that knows thoſe may within a few yeares get great riches by the making of divers ſorts of wines: but let the ignorant abſtain from this wine-making. Thou maiſt firſt make tryall in a Cauldron, inſpiſſating new wine of a leſſer value, and thou ſhalt ſee by experience that no wine goes from the new juice, that which inſpiſſated being left in the bottom of the veſſell, and to this thou maiſt again mix a ſufficient quantity of water, for the diſſolving of it, and thou ſhalt have a new wine having the ſame ſweetneſs of the firſt, except the taſt attracted from the Cauldron, which diſſolution, fermentation being made, yeelds a wine, but ungratefull by reaſon of the yellowneſs, and taſt contracted from the Cauldron. But if thou knoweſt thoſe two aforeſaid ſecrets withous doubt thou ſhalt make moſt excellent wines of new wine inſpiſſated.

PARAG. XIV.

A very eaſie preparation of verdygreaſe out of old copper, of which a pound doth not exceed the price of 6 ſtivers.

THis indeed is a very good ſecret, whereby after a moſt eaſie, not tedious, or coſtly way, verdy-greaſe is made in great quantity very uſefull for Painters, whereby any one may be able to maintain his family honeſtly.

PARAG. XV.

A new and unheard of diſtillation of vineger in great quantity, of which two runlets of nine gallons exceed not the price of half a ryall, with which many excellent things may be done, eſpecially the cryſtallizing of verdy-greaſe, of which one pound doth not exceed the price of half a ryall.

THis way of diſtilling hath yet hitherto been altogether unknown, and worthy to be mentioned in this place, becauſe no body can be without diſtilled vineger in Chymicall operations, and the rather becauſe by the help thereof colours are purged, and clarified, ſo as to be ſold for a greater price, by which means any man may honeſtly maintaine his family. Which otherwiſe cannot be done in the diſtilling of vineger in glaſs veſſels, which is tedious and coſtly.

PARAG. XVI.

A very eaſie diſtillation of the moſt ſtrong ſpirit of urine, very ſpeedy, not coſtly, nor tedious, where 20 or 30 pints may be made for a ryall, by the help whereof many excellent things may be done in Phyſick, Alchymy, and Mechanicall affaires, but eſpecially with it vitrioll is made out of copper, very beautifull, blew, and moſt excellent in Medicine, and Alchymy: with which ſilver is made ſo fuſile, that by the help thereof glaſs veſſels (as cups, baſons, diſhes, and other veſſels) may as well inwardly, as outwardly be gilded: ſo as to appear like ſilver.

IN the ſecond treatiſe of the Philoſophicall Furnaces, I made mention at large of the diſtllling of this ſpirit, and I ſhewed divers wayes of it; but of this way, of which here I treat, I made none; becauſe this diſtillation hath no affinity with all others that are to be done by inſtruments, whether of earth, glaſs, or metall, but only by wooden without any fire, ſo that 100 pints require not one pound of coals: where not onely 20, 30, but even 100 pints may be made for one ryall: Which diſtillation indeed is artificially.

N. B. After the ſame manner almoſt is the diſtillation of vineger performed. Now what I ſaid in the appendix of making 20, or 30 pints for one ryall, I did it therefore becauſe it might be more probable then if I had ſaid 100. And becauſe that price of 20 or 30 pints doth not ſeem probable to the ignorant, I ſay now openly, that the price of 100 pounds doth not exceed one ryall; let him therefore beleeve it that will, it is all one to me, whether thou beleeveſt or not, becauſe the truth is certain. Although this ſpirit be moſt excellent in divers Chymicall operations, yet I ſhall communicate onely the medicinall uſes thereof, for if it be made in a great quantity eaſily without coſts and labour, it may be uſed liberally in medicine, but eſpecially in moiſt and dry baths, by the help whereof may grievous and otherwiſe incurable diſeaſes are oftentimes happily cured. For this ſpirit doth many wonderfull, and incredible things; ſo that honours and riches follow it. Hence therefore it is manifeſt that this paragraph is not to be contemned, after the manner of detractors. I could adde more things concerning the power and vertues thereof, but time will not now ſuffer.

PARAG. XVII.

A moſt eaſie, and not coſtly way of diſtilling of the ſpirit of ſalt, of which one pound may be ſold for the price of 6 ſtivers, and it is very profitable in medicine, Alchimy, and other mechanicall arts, but eſpecially for the doing of thoſe things which follow.

IN the firſt part of our Philoſophical furnaces, I ſhewed an eaſie way of diſtilling of ſpirit of ſalt in a great quantity: But this Paragraph treats of another certain peculiar diſtillation, which I wil not divulge; new ſpirit of ſalt being neceſſarily requiſite for divers excellent operations (unknown to the vulgar) I thought it worth while to ſpeak of the commendation thereof. I ſhall at this time for brevities ſake ſpeak onely of the chymicall uſes thereof, reſerving the reſt for ſome other place and time.

PARAG. XVIII.

The ſeparation of gold from ſilver without hurt to the jewels: alſo the ſolution, and ſeparation of gold that containes ſilver, and copper, and the precipitation of gold from the water, without any hurt to the water, ſo as that it may ſerve for the ſame uſes again; wherefore this is the beſt way of ſeparations which are done by a humid way, reducing gold to the higheſt degree.

THe ſeparation of gold from gilt ſilver by *aqua regis* is well known to Chymiſts, as alſo the diſſolving, and ſeparation of gold, containing ſylver, and copper: but it is ſeldom uſed for theſe following reaſons, *viz.* becauſe that ſeparation of gold from gilt ſilver, (*viz.* when the ſilver is not covered thick with gold) doth not quit coſt, by reaſon of the coſt and pains that is required for the making of the *aqua regia*. Now the ſpirit of ſalt that is made this way is with coſts. Secondly, although the gold be diſſolved in *aqua regia*, yet it is hardly ſeparated again: Some have precipitated gold that is diſſolved in *aqua regia* with *lixivium* of ſalt of Tartar, and being precipitated have edulcorated it, and with borax have reduced it, and becauſe this calx when it feels this heat of the fire is kindled with a great noiſe, they have mixed it with common ſulphur, and being mixed have calcined it to take away the cracking and kindling of it, *viz.* before they have reduced it with borax.

This operation requires a great deal of diligence, great labours, and not ſmall coſts, if thou wouldſt not loſe any of the gold, wherefore it is not the beſt way. Others have by the help of diſtillation ſeparated the *aqua regia* from the diſſolved gold, but beſides their labours and ſtenches, as alſo the danger of breaking their glaſs, have loſt ſome of the Gold by means of the *aqua regia*. Wherefore this way of ſeparation alſo is not to be eſteemed as good. Some have precipitate the diſſolved gold from the *aqua regia* with the ſolution of vitrioll; and allome, into a black powder, which in the melting have been found mixed with iron; and copper attracted from the vitrioll: wherefore this alſo is an unprofitable way of ſeparation. But in our ſeparation there are not ſuch obſtacles, for the gold being diſſolved in the ſpirit of ſalt, there is preſently put a certain precipitating thing to it, and the ſolution being in a copper veſſell (where there is no danger of breaking veſſels) is ſet upon the fire to boil, in the interim whereof a moſt fine gold is ſeparated and precipitated; the copper being left in the ſpirit of ſalt, which you muſt decant off from the gold (which you muſt edulcorate, dry, and melt afterwards) and keep for your uſe By which means all things are done without loſs, or coſts. Which indeed of all humid ſeparations is the beſt and moſt profitable; whereby gold that contains copper and ſilver is diſſolved. Of which thing more in the fourth part of Furnaces.

PARAG.

PARAG. XIX.

The ſeparation of gold from pure fat clay (argilla) ſand, flints, and other mines, which is ſparkling, ſpongeous, and light, which otherwiſe could not be ſeparated either by the help of waſhing, or with Mercury, or by melting; viz. *by a certain eaſie way of elixation not without much gain.*

THis Paragraph treats of a certain operation to be performed with ſpirit of ſalt; whereby any one may in any part of the world, where mountains, rocks, ſtones, ſand, or pure fat clay are, eaſily get an honeſt livelyhood, & more then that. For in every part of the world may be found potters clay, ſand or flints that have ſubtile gold in them, *viz.* inviſible in clay, and ſand, but viſible ſometimes in flints, and ſtones when they are broken, which if they be too hard muſt be heated red hot, and quenched in cold water, that they may clear, and be brought to a powder by grinding, or pounding, by which means the gold is made more manifeſt in them. There are ſometimes found whole mountains full of thoſe ſtones, which have ſuch a ſpirituall or ſubtile gold in them, which is ſo ſubtile, light, and thin, that it will not quit coſt to melt them. But by this way it is eaſily drawn forth with ſpirit of ſalt, ſo that any one may privately, honeſtly, and plentifully get his maintenance. Now you muſt have a knowledge of theſe ſtones, of all which flints are beſt known, in which being made red hot, quenched, and broken in water, if there be gold, it appears every where in all and each part thereof, of a reſplendent yellow and red colour, which if it be ground to powder, appears with a red colour, which flints had not before they were made red hot in the fire: theſe kinds of ſtones have alſo in them iron, which yet is no prejudice to this buſineſs, becauſe only the gold is precipitated from the ſpirit of ſalt, the iron being left in the water. This is a very excellent and eaſie labour, which in a great quantity of the matter may be practiſed with a great deal of gain, ſo that by this means thouſands of men may get their livelyhood without any prejudice to their neighbour. Now this ſecret conſiſts in two things, *viz.* in a plentiful and moſt eaſie preparation of ſpirit of ſalt, and a due precipitation.

PARAG. X.X.

A new and unheard of proving of tough and ſtubborn minerals, viz. *of all and each, whereby their nature and form is found out, that which cannot be done otherwiſe by any vulgar way: And this ſecret is eſpecially for thoſe places, where there are abundance of mines. For oftentimes there is found a ſtubborn mine of gold, which if examined yeelds nothing, but is left unlaboured in,* &c. *Sometimes there are found other things, where there are not found mines of metals, as white and red talc,* &c. *which being tryed after the common way, yeeld little or nothing, yet abound with gold, and ſilver occult in them, which cannot after any other way be ſeparated with advantage.*

THis trying or proving is far different from that vulgar made in teſts, and cuples, eſpecially being ordained for thoſe tough and ſtubborn minerals, that will not mix with lead; of which if they will not be mixed with lead, how ſhall we know their form and nature? This ſecret therefore is very profitable and excellent, for thoſe eſpecially, which ſeek their fortunes in mountaines, in the earth, mines and ſtones: For by this means their form, although it be never ſo litle, is eaſily found out, which being known, you may alſo know, whether ſuch things, as clay, ſands, ſtones, *&c.* may be operated in with gaine or diſprofit. Now this ſecret conſiſts chiefly in the joyning of lead therewith. For it is impoſſible to finde out the form of minerals and other things digged out of the earth, if they cannot be mixed with lead, whereof many abounding many times with gold are, becauſe they have not affinity with lead, left unlabored in as unprofitable ſtones. Which if by help of any *medium*, they can rightly be united to lead, do not leſs yeeld their form or golden parts, then other milder minerals, and that not without profit: wherefore this ſecret is to be accounted the foundation of Alchymy.

PARAG. XXI.

A new compendious, and unheard of way, whereby minerals are ſpeedily in a great quantity melted, and that not without great profit. Where in the ſpace of one day by the help of a certain peculiar furnace by way of abſtraction, more is ~~melted than~~ in that common in the ſpace of eight dayes: by which means there is not only a great deal of coſts ſaved, but alſo more gaine, then if otherwiſe.

THis way of melting, whereby metals are in a great quantity melted hath not yet been known, but without doubt ſhall at one time, or another be publiſhed becauſe it is far to be preferred before that common way. Now this ſecret conſiſts in this, *viz.* that it is performed without bellows, but by certain vents, blowing the coales as ſtrongly as bellows. For they that operate in minerals know well how much coſts they are at every yeer upon bellows, and mils that move, and lift them up. Moreover you muſt tranſport your minerals and coals into valleyes for the waters ſake, without which the bellows cannot be ordered, which labour is tedious and coſtly. Alſo there is this commodity in it, that in this way of melting you may make your furnace as great as you pleaſe, which you may not do in the other way: becauſe greater furnaces require greater bellows, and a grater quantity of water, and therefore greater and larger milles; but there is not ſuch a commodity in every place. In this our new way of melting we need not bellows, nor mils although we erect never ſo great furnaces, for by how much the greater they are, ſo much the greater quantity may be melted in them. Wherefore I do not doubt but that of all, this is the moſt noble, profitable, and excellent way of melting. Now whether or no all minerals may be melted in this furnace, I know not, for I made tryal only in the mine of lead, and in no others by reaſon of defect of mines, and place conveient for the erecting of the furnace. But I hope ſhortly to live in a more convenient place, where I ſhall neither want coals, nor mines whereby to make tryal in fire and mines.

PARAG. XXII.

A better way to ſeparate things melted. A better ſeparation of ſilver from lead.

THis ſecret is nothing elſe but a certain peculiar ſeparation of lead from ſilver contained in the lead. For as every where in ſhops lead that hath ſilver in it is ſeparated, being in the fire by the force of blowing, turned into lytharge; ſo almoſt after the ſame manner is this our ſeparation: where lead is reduced into lytharge, but not by the force of blowing, but by the help of a certain furnace, wherefore this is far better then the vulgar. And this is to be underſtood concerning that ſeparation, which is done in great quantity, but there is alſo another ſeparation, which is practiſed in the ſeparation of metals of a leſs weight, *viz.* of a hundred pound weight, which is not done by the help of common copples made of aſhes, but of crucibles, whereof four, or ſix, or eight are placed together in a little furnace amongſt coals, *viz.* immediately, not under a tyle, by which means more proofes are made in one day then under a tyle by the help of copples in eight; becauſe by this means in a ſhort and at one time ſeparation is made in one veſſel; but in the common way minerals (if they be ſtubborn) muſt be burnt, and then be boyled in a crucible with ſome certain addition in a wind furnace, or by the help of bellows; then being boyled in a teſt under a tile be converted into droſs, then the droſs be coppled. Which four labours, *burning, decoction, ſcoriation, and coppling* can ſcarce be done in three or four hours times; but in this ſeparation minerals whether mild, as ſtubborn, are not dryed, nor decocted, but all by one and the ſame labour are finiſhed in a quarter or half an houre, and in one crucible.

Which trying of minerals is moſt excellent, and profitable, without which I had ſcarce ever attained to ſo much knowledge of metals. For it is an eaſie matter to conjecture how much labour, and time is required (to ſay nothing of coals) in every proofe, if a particular fire ſhould be kindled in its own furnace for every particular proofe, *viz.* for divers ſeparations; All which are performed by one fire, and in one furnace, *viz.* by this new way of ſeparation. And this is a ſpeedy ſeparation of metals for the ſtudious ſearchers of nature, who by reaſon of multitude of other occaſions cannot practiſe that common way, as alſo for thoſe that digg and are imployed about minerals of all ſorts, alſo for Chymiſts that operate in gold, & ſilver, for the tryal of the goodneſs of their work. Alſo this ſecret ſeparation may be practiſed not only in a leſſer but alſo in a greater quantity; for ten or twenty pound may as eaſily be tryed as one or two ounces, but becauſe in a greater quantity a greater weight of lead is required, greater crucibles are required alſo. But in this new ſeparation there is not ſo great a quantity of lead required as in that vulgar. For if a double, or threefold quantity of lead be added to one of any metal, or mineral although it be copper (which requires otherwiſe ſixteen or eighteen parts of lead) it ſhall be as well and truly purged. Moreover neither the lead nor the copper is by this means loſt, neither is it again to be melted out of the copple into which being porous it entred in that common way; becauſe in this copper is eaſily ſeparated from the lead, *viz.* in a ſmall fire.

Wherefore it is no ſmal Chymical ſecret, opening a gate to divers others. But thou ſayeſt; you do indeed promiſe many things, but perform few; you do indeed make mention of many ſecrets, but teach nothing; who can ever I pray you by the acuteneſs of his own wit finde out ſuch things? I anſwer, It is not my purpoſe to offer to thee a morcel chewed before, wherefore ſeek, and labour inceſſantly as I have done, and others have done, thou who coveteſt new things. No body taught me beſides exerciſe, uſe, and fortune, according to the Proverb. *Uſe makes an artiſt, and by working we become workmen.* If I had had ſo much guidance, as here I have given to thee, I had without doubt attained to greater things with leſs coſts and charges. America a moſt vaſt and fourth part of the world being ſearched and examined by *Chriſtopher Columbus*, and that not without great care and paines, how much

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priviledge I pray you have others with leſs danger, and labour to deport from thence treaſures? Did not he deſerve praiſe, being a finder out of a moſt rich country, although he did not demonſtrate with his finger to every one? Did not many follow his direction, and tranſport from thence through the wide ocean moſt vaſt riches? What now if thou ſhouldeſt betake thy ſelf to ſome labour for this ſecret ſake, by the help whereof gold, and ſilver might be obtained without the danger of Navigation. But thou wilt ſay with the Fox; *Foot ſteps make me afraid*, I have ſeen many loſe their labour and coſts, and ſpend their houſes and lands. I anſwer; I confeſs it, but the fault is not the arts but the Artiſts. But I do not doubt but that theſe my writings will illuſtrate the whole body of Alchymie, and recal many from their errors. But know thou that there is another *Saturne*, with which wonderful things are done in Alchymie (where that vulgar is not uſed) *viz.* that, which *Paracelſus* doth ſo much commend in his *Cœlum Philoſophicum*. Now in this ſeparation that common lead which is known to all is uſed, being no way inferiour to that of the Philoſophers its brother, which being waſhed, and ſpiritualized dares no leſs then the other enter into the kings cloſet for to receive its preferment.

PARAG. XXIII.

How minerals in defect of coales made of wood, may be melted by the help of pit coales, after a moſt eaſie, and profitable manner.

NEither is this labour performed with bellows, but by the flame of the fire of coals, whether they be made of wood, or are pit coals, compaſſing the minerals, as if they were compaſſed about with a crucible. Now this way is only for metals that are ſoft, and eaſily fuſible, where there is not ſo much loſs of the minerals, as in the other way.

PARAG. XXIIII.

The fixation of ſulphureous, arſenical, antimonial, cobolts, and other volatile poyſonous minerals, which otherwiſe by reaſon of their volatility cannot be retained, and melted in the fire, viz. *by the help of any cementing furnace, or ſuch that hath a grate, that gold and ſilver may the better be drawn from thence.*

IT is not unknown to the diggers of minerals that ſometimes there are immature minerals found which have neither gold nor ſilver in them, which being a little while expoſed to the aire, and then being tryed yeeld gold and ſilver as wel in a greater as in a leſſer proofe; ſuch are Biſmuth, Coboltum, Auripigmentum; and other Antimonial, and Arſenical minerals. The aire therefore cauſing this maturation (*viz.* exciting the active, and maturative ſalt of the minerals) why may not ſuch minerals be perfected, and maturated by ſuch kinde of fixing ſalts? certainly it may be done by art, and nature, although it cannot be conceived by a dull wit. What adviſe therefore is to be given? Is this ſecret to be revealed to the incredulous & ignorant? By no means, let them ſeek it as others did, and they that ſhall finde it out are predeſtinated of God ſo to do, or elſe they ſhall not, although they ſhould be informed more of this thing. But be not thou ignorant that the gold and ſilver that was drawn forth out of thoſe immature minerals after maturation, did not lye in them corporally; for then they might be ſeparated by that artificial ſeparation, but ſpiritually like an infant in its mothers wombe compaſſed about with many coverings. As *Paracelſus* cals ſuch minerals *ſulphura embryonata*, wanting nothing but maturation, of which they are deprived by being taken too untimely out of the mines by the miners. Now which way they are fixed, is not to be taught in this place; yet this I will ſay that every volatile immature ſulphur hath not affinity with corporeal fixed gold, and therefore ſcarce to be mixed with it; as it appears by the ſeparation of metals by the help of fuſion, where ſome

ſome metals are melted together,*viz.* fixed,and unfixed,for in the adjection of common ſulphur, which being mixed with the unfixed being next to it, converts them into droſs, but the fixed,*viz.* the gold and ſilver (eſpecially the gold) will not mix with it, but reject it, and ſeparate themſelves naturally from that mixture, and falling to the bottome are turned into a *regulus*, eſpecially the gold, which being purged from all droſs refuſeth to be againe polluted with impurities, by reaſon of the antipathy, which is betwixt ſulphur fixed, and unfixed.

N. B. Now common ſulphur fixed is eaſier mixt with gold then with other imperfect metals; that which is wonderful in the eyes of the ignorant, in which there lyes a great ſecret worthy to be taken notice of Arſenicall minerals,and Kobalta alſo are fixed ſo as that afterward they being united with ſilver will remaine with it. But Antimony and *Auripigmentum* partake of both natures, *viz.* golden, and ſilver, in which in part they may be fixed. Now I muſt confeſs that this is a very dangerous labour, where it is to be handled cautiouſly,and not but in our fourth furnace. As for my part I profeſs that Arſenical fumes never hurt me, who never uſed any other preſervative then that I never entered upon thoſe operations faſting: wherefore let him that ſets upon ſuch operations eat firſt a piece of bread with butter, and drink a draught of wormwood beer, and avoyd the fume as much as he can.

PARAG. XXV.

A certaine profitable ſeparation of ſparkling, and ſpongious and thin gold, and ſilver from ſand, pure clay, and flints, &c.

I Said above in the 19. Paragraph of ſuch gold, that it could be ſeparated from ſand neither by the help of waſhing, or amalgamation,becauſe being lighter then the ſand cannot be reduced a part into a ſtraight place, yet it may be ſeparated with profit by elixation with ſpirit of ſalt: but here it is ſaid, that it may be ſeparated by the help of fuſion, that which will ſeem incredible to many by reaſon of that ſmall quantity of gold that is mixed with a great quantity of ſand, *viz.* how that little quantity of gold may with profit be ſeparated from that great quantity of ſand or clay. To whom I anſwer, that it cannot be ſeparated by the help of flowing or addition of any thing (though never ſo vile) I ſay with profit by the force of liquefaction, becauſe the melted gold will not quit coſt: It muſt therefore be done another way. There are ſome leſſer metals, which being to be deſtroyed, and perfected by art require the addition of ſand or flints, without which their deſtruction, or perfection cannot be done, in the place of which if ſuch flints and ſand be added, then their gold which otherwiſe cannot be melted is produced into light with that which the deſtroyed, and amended metals yeeld, and that with greater profit.

PARAG. XXVI.

A certain profitable and ſecret melting of gold contained in baſer metals and minerals, which cannot be done in any other common way.

THis Paragraph treats of the ſame buſineſs as the foregoing did, And this operation is nothing elſe but the deſtruction of baſer metals, as of lead, tin, iron, and copper, and a reduction of it into a certaine earthy being, like to glaſs, or droſs, by which deſtruction and reduction the metals are by force of the fire maturated, and partly purged by the help of addition, ſo that afterwards they may yeeld their gold, and ſilver in ſeparation, which otherwiſe they could not.

PARAG. XXVII.

A certain ſpeedy and not coſtly ſeparation of melted gold, and ſilver by the help of fuſion, ſo that by one man in one day in one furnace ſome *hundred pounds weight may be ſeparated, and indeed with leſs coſt, and labour then by* Aqua fortis *or* Cements.

This operation indeed is very excellent, ſpeedy, and profitable (becauſe it is done without *Aqua fortis*) whereby gold is ſeparated from ſilver; there is no man that is experienced who is ignorant of the tediouſneſs of the ſeparation made by the help of *Aqua fortis*. But this operation is thus. Silver is broken into pieces, with which a crucible is filled, then a ſeparating flux being given, the ſilver being melted the gold is precipitated in the ſilver with a certaine thing precipitating it into a *regulus*, which being done let all be poured forth together into a cone, which being cold, the *regulus* is ſeparated from the reſt of the maſs by the ſtriking of a hammer, but yet not having loſt all the ſilver, but containing to one part of gold two or three of ſilver, which after cupellation is done muſt be ſeparated by *Aqua fortis*. And by this means gold contained in a hundred marks (or fifty pounds) of ſilver is reduced into two or three, which afterward are ſeparated by *Aqua fortis*: where you need not, firſt purge thoſe 100. markes by burning, or break them into ſmall bits, and then ſeparate them by *Aqua fortis*; but now we have need of *Aqua fortis* only for a few Marks, where much charge is ſaved in buying abundance of *Aqua fortis*, as alſo in glaſſes being ſubject to breaking; as alſo much labour. Secondly, a very great quantity of gilt ſilver may in the ſpace of one day be ſeparated by this way, and that with little labor and coſts, which by *Aqua fortis* could not be done. But do not thou think that this is that way of which *Lazarus Erker* wrote, becauſe there is a great difference betwixt them. For although that way of ſeparation ſpoken of by *Erker* be not to be ſlighted, yet it is ſomewhat tedious, and coſtly; but ours is not.

PARAG. XXVIII.

A very ſpeedy reduction of wrought gold, as of chaines, rings, &c. *to the higheſt degree; alſo an eaſie ſeparation of gold from gilt ſilver, ſo* *that by this way a hundred mark may be more eaſily ſeparated, then twenty the common way, where much labour, coſts and time is ſpared.*

HEre is mention made of another certain ſeparation having no affinity at all with the foregoing, reſpecting only gold, which is to be ſeparated after a moſt eaſie way from ſilver and copper, and to be reduced to the higheſt degree. Which labour alſo is very profitable and eaſie, becauſe it is not done *per quartam*, by Cement, or Antimony, but by a certaine peculiar flux which is to be added to the metal when it is to be melted, which being melted, that flux congregates the ſilver, copper and other metals, and turnes them into droſs, which afterwards being poured out are ſeparated by knocking them, the pure gold is to be taken away being ſeparated from the addition. Afterwards alſo the addition of the flux is ſeparated from the addition of the gold by precipitation; ſo that firſt ſilver only is precipitated (if you pleaſe) from the flux, then the copper; or let the ſilver only be ſeparated, the copper being left in the flux. By this way gold, ſilver and copper are ſeparated in the ſpace of one hour, and every one apart, which otherwiſe could not be done in the ſpace of a day; This indeed is the moſt excellent ſecret of ſeparation.

PARAG. XXIX.

The ſeparation of ſilver in a greater quantity out of any lead, then by proof of cuples.

THeſe words being read, there will without doubt ariſe a diſputation amongſt Chymiſts and refiners of the poſſibility of this thing; but to them anſwer is made in the fourth part of our furnaces, where alſo it is treated concerning the proving of metals, where it is demonſtrated that the proof of cuples is not ſufficient for all manner of ſeparation of ſilver from lead, to which I refer the reader. Now that in any lead there is contained great quantity of ſilver I can teſtifie ſie that oftentimes have made tryal of this ſeparation. I do religiouſly proteſt before all honeſt Chymiſts, that lead is nothing elſe but impure, and unripe ſilver; he therefore that knows how to purge, and maturate it, without doubt ſhall have a moſt ſingular thing. I indeed have tryed many things, ſeeing the poſſibility of it, but could never attaine to my deſired end, becauſe I could never have fitting veſſels, that could hold lead with its ſope the whole time appointed for that operation: Yet I could do it with leſſer crucibles by placing them, one in another, ſo that the matter that penetrates the firſt may be retained by the ſecond, or third, but not with profit. The time therefore of mercy is to be expected till God ſhall at length ſhew the matter, out of which ſuch veſſels may be made, which may ſhorten the other leg of old *Saturne*, with which he is uſed to eſcape, that he may againſt his will abide the due time of maturation, and purification.

PARAG. XXX.

The melting of good gold out of old iron, which although it cannot be done with great profit, yet ſufficeth them that are contented with few things.

THat iron partakes of a golden nature, not only Philoſophers but alſo ancient and modern diggers of minerals teſtifie: Now they did not ſay that all iron was of one, and the ſame goodneſs, becauſe alwayes one is more pure, and more golden then another, wherefore there is a great difference in iron. Sometimes it is ſo rich with gold, that ſometimes in a mine that is digged (before the iron be melted) there are found graines, veines, and little ſtones of pure gold, witneſs *John Matthesius* in his *Sarepta*, together with other Philoſophers, ſaying that they have in divers ſtones (mines of iron) brought out of the mines of a mountaine, which is called *Fichtelberg*, as alſo out of the mines of *Stiria* ſeen pure gold like little veines. *Paracelſus* alſo doth much cry up the Iron mines of *Stiria* and *Corinthia*, and their riches, and that without doubt not for their iron and ſteel, but for the plenty of gold hid in them, unknown to the diggers. On the contrary the Swediſh, and German iron hath ſometimes no gold in it, as I have often tryed. Whrefore let him that will ſearch into it be cautious in the choice of his iron.

Now let this melting de done with Antimony, which alſo for the moſt part hath gold in it ſelf (yet one more then another) that of *Hungarie*, *Tranſilvania*, and Cranachia are the beſt; the reſt have but little in them; now gold may be melted though never ſo little, in iron and antimony, but not with ſo much profit, as if a greater quantity thereof were in them. But thou wilt ask if it be ſo, why is it not ſeparated from them by the miners? I anſwer, the miners are ignorant of this ſeparation, labouring only out of uſe and cuſtome, as mercenary, without any other conſideration. That moſt witty *Lazarus Erker* himſelf alſo confeſſeth, that the mine of iron hath much gold in it; which is ignorantly by the miners put under the hammer, who alſo teacheth the ſeparation of ſilver from iron, but of gold makes no mention; which haply he knew not: for *no man can know all things*. But if the miners did know that gold was in the foreſaid mines, yet it is a queſtion whether in thoſe places be afforded the conveniences of ſeparating it with profit. For I do eaſily believe if the ſeparation of gold from Antimony were known to them, that they would not neglect it, but rather ſeparate the gold, then to ſell it being left in Antimony, at a low rate. They indeed do know that there is gold in Antimony, as alſo how to ſeparate, it but with loſs. What profit I pray you by the ſeparation of gold which will coſt more then the gold is worth? Wherefore they do rather ſell the gold with the Antimony, then ſeparate it. For the miners are ignorant of that Antimonial ſeparation by which not only the gold, but the Antimony it ſelf is preſerved: and they that will ſeparate that, do it by the addition of a great quantity of lead by the help of cupellation, but with the loſſe both of the lead and Antimony. But after this manner our ſeparation is not performed, but gold is ſeparated from iron, and Antimony being melted, without the addition of any ſtrange thing (corrupting the iron or antimony) ſo that the ſeparation of the gold being made, the iron and antimony may be uſed again, ſo that nothing thereof periſheth, but what evaporates in ſeparation; or is unwittingly caſt away. And by this, and by no other way gold is ſeparated from iron and antimony with profit. Now this ſeparation is not uſed about iron, and antimony only, that have gold in them, but alſo about others; as for the ſeperating of gold from ſome Marcaſites, *lapis calaminaris* and other ſtubborn minerals, in which there is a very ſpiritual, and thin gold (and therefore not to be ſeparated thence by the help of the common ſeparation with profit) and that with great profit without the loſs of the Antimony, *viz.* whileſt thoſe minerals are melted with antimony, and the gold thence precipitated by iron into a Regulus of one pound weight proceeding from a hundred of the mine and antimony containing in it all the gold of the mine, iron, and antimony, which Regulus may afterward be further elaborated for the ſeparation of all thoſe ſorts of gold, and that without much coſts; where alſo the antimony is preſerved, which may againe be uſed for other things. This ſeparation therefore is a moſt profitable ſecret (although iron and antimony having gold in them ſhould be found in no place) for the ſeparating of gold, *viz.* out of other ſtubborn minerals, where gold is without any loſs reduced into a narrow compaſs, or Regulus; which may eaſily be elaborated further, where the whole Antimony melted with the mine, need not to be boyled, and ſo deſtroyed with lead, and that rather with loſs, then profit, becauſe in this operation not only the gold is drawn forth, but the antimony alſo is preſerved.

Which way of ſeparation I ſubmit to the cenſure of all Chymiſts, and honeſt refiners that are skilful, and that for divers cauſes. I queſtion not but to have the approbation of all and every one of them that will not contradict the truth. Moreover there is alſo another ſeparation of gold from iron, and antimony, which is not done in crucibles; where they are firſt mixed together, then immediatly reduced with a ſtrong fire of coals for the obtaining of the Gold of Iron and Antimony.

PARAG. XXXI.

Alſo a ſeparation of gold and ſilver from any tin and copper, according to more or leſs.

THis ſeparation is performed otherwiſe, not with antimony, but with lead, *viz.* when before tin and copper are in a ſpiritual manner mixed with it, without which ſpiritual mixtion the corporeal mixtion of metals is nothing worth. For every one that is skilled in metals is not ignorant, that tin melted with lead after the common way is not radically mixed with it, without which radical union of metals they cannot be perfected, nor bettered one by another. They erre therefore whoſoever they be that endeavor to ſeparate gold, and ſilver from tin, copper, and other imperfect metals by the force of common liquation; let them therefore whileſt that Philoſophical union, or conjunction is unknown to them, timely abſtaine from ſuch vaine and unprofitable labours, being that which I counſel them faithfully, having tryed the truth of the thing with loſs of time and coſts. But now what that ſpiritual mixtion is which may be done by the help of waters as well humid as dry, that excellent Philoſopher and Chymiſt *Theophraſtus Paracelſus*, wonderfully magnifies it, and wrote many things of it.

Yet here I would eſpecially have you take notice that to this radical mixtion of imperfect metals there is alſo required gold by the help whereof there is a ſeparation of the pure from the impure, in impurer, and imperfect metals: And this may be compared with that divine ſeparation, where Chriſt being preſent, the good ſhall be ſeparated from the bad (their bodies be firſt corrupted) God attracting the pure in heart, but rejecting the impure. Which alſo ought to be done in this ſeparation of imperfect metals, *viz.* they muſt firſt lay aſide their impure bodies, which muſt be corrupted and purified; for then gold doth radically aſſociate it ſelf to them, and makes a ſeparation attracting like to it ſelf, and reject what is unlike. For as every man hath a ſoul, which is a Divine ſpark, but polluted with ſin, infernal ſulphur, the craft and deceit of the divel; ſo alſo metals have in their center ſomething that is incorruptible, which is yet ſo compaſſed about with impure terreſtial ſulphur, that (in my judgement) cannot be mended unleſs they be corrupted and brought to nothing, out of which nothing gold doth afterward attract that good ſpark, and converts it into a good ſubſtance, which before the taking away of that ſulphureous, black accidental impurity could not be done. In like maner we alſo cannot be with God before our hearts are purified from that old leaven (left to us by *Adam*) and put on Chriſt, and become like children. Which few words truely, with which nature doth in this place agree, inculcating faith in us, are obſerved by few. And as it hath been ſaid of gold, ſo alſo it is to be underſtood of ſilver, which being mixed with corrupt metals attracts its like to its ſelf as its nutriment, like to divers ſeeds in the earth, whereof every one doth attract its like, the ſuperfluity being left. As for example, if any one ſhould caſt into the earth fennel-ſeed, cummin, and onyon-ſeed, the fennel-ſeed would attract from the earth only that which is proper to it ſelf for the production of fennel, with leaves, ſtalks, and ſeeds, the ſame is to be underſtood of the ſeeds of onyons, *&c.* The ſame alſo fals out in the mineral matallick kingdom, whileſt perfect metals are ſowed into imperfect, where they putrifie, and attract for their nouriſhment their like. Now I did not ſay by this ſimilitude that gold and ſilver were the *general ſeed of metals*, for gold is only a receptacle of that of the metallick ſeed, and not the ſeed in its whole ſubſtance. Moreover this ſimilitude is brought in, that it might appear, how like things being ſpiritualized, embrace and retaine one the other. But I would not have thee perſwade thy ſelf that metals are to be diſſolved in corroſive waters, and to be diſtilled; which labour of the Chymiſts is noxious to metals, and therefore ſterile, fraudulent, and Sophiſtical; by which many men, yea very learned have been deceived, thinking to make the tincture by this way, contrary to the courſe of nature; wherefore never any good fruit could be produced from thence; Neither could ever any artiſt inſiſting in this vaine way have any hope of profit thereby, until he decline from this to the true and right way.

Now metals muſt be Chymically ſpirituallized without corroſive waters, and without various artificial inſtruments, by the help of their proper *humidum radicale* without much coſts and labour. For that whole buſineſs (*viz.* the purification, vivification and ſpiritualiſation of metals; which is done by ſolution, putrefaction, diſtillation, and circulation (*viz.* Philoſophical) may be done by a skilful Chymiſt without glaſſes in the ſpace of one hour, ſo that it then needs not the ſpace of ſo many moneths to be with corroſive waters vexed, and macerated. And this is to be underſtood of the humid Philoſophical way of a particular ſeparation. But he that knows how to drown gold, or any other golden ſubject in any moſt pure, moſt penetrating, fixed, and fuſile ſubſtance which hath ingreſſion into other flowed metals, and would be radically mixed with the purer parts thereof, he without doubt will come ſpeedily to a particular tranſmutation or ſeparation of the pure from the impure with a legitimate and true manuduction to that univerſal work, with which many hitherto have in vaine been intricated.

PARAG. XXXII.

A maturation of mines, that they may give more gold and ſilver in the fuſion.

THis concerning the maturation of minerals, and metals is one of the moſt excellent of my ſecrets of the mending of metals. For I have often endeavored by a certaine ſecret way to fix metals and minerals, and I found that they might be in ſome part maturated, ſo as to leave gold and ſilver in the cuple, which before they could not leave, *viz.* before they were maturated. Now I never had experience of the truth in a greater quantity,*viz.* of many pounds; and what the cauſe of this thing is, you may ſee in the beginning of theſe Annotations; it is needleſs therefore here to repeat it.

But this I muſt yet ſay, that this fixation is ſomewhat coſtly, which moreover cannot be done in any part of the world with gaine (although it may in a greater quantity, which yet I am ignorant of) for that fixation is done by the benefit of a certaine water, which alſo nature uſeth in the earth (which you cannot have in every place, where there is not good earth) And if you expect good by the water, the minerals, fixation being made,muſt yeeld plenty of gold and ſilver, or elſe we labor in vaine. I often made tryals with a hundred pound weight of the leſſer immature minerals, or ſemimetals, and I found in a hundred pound weight of cobolt a Mark and half of pure ſilver, and in biſmuth 2.3.5. ounces of gold, Alſo *lapis calaminaris* and Zinck (being digged in a due place) yeelded their gold abundantly. But oftentimes computation being made of the price of the mineral to be fixed, and of the matter fixing, and abſtraction of this price being made from the price of the gold and ſilver produced from thence I found very little and ſometimes no gaine at all, ſo that for the preſent I left the work, until I ſhall obtaine a water at a leſſer price, or ſhall be able to maturate metals in a ſhorter time for the getting of a greater quantity of gold and ſilver, being that which experience will teach.

Although I never attaine to the fruitful perfection of this maturity, yet I would not have it be contemned,as being moſt profitable in other Chymical operations, and confirming me in my conceived opinion of perfecting metals by nature, and maturating imperfect minerals and metals (nothing withſtanding) as well by art, as by nature in the bowels of the earth, and in converting them into gold: of which thing more at large in *my book of the generation of metals.*

PARAG. XXXIII.

A ſeparation of gold and ſilver out of Arſenick, Auripigmentum *and Antimony.*

THeſe volatile minerals have in them commonly volatile gold and ſilver, eſpecially thoſe that come from the mines of gold and ſilver, leaving nothing in the cuple. But he that knows how to fix a little of them, and to add to them a metal in which thoſe volatile may hide themſelves, ſhall certainly ſee a poſſibility of drawing good gold and ſilver out of thoſe volatile and contemptible minerals yet not out of all Antimony, Arſenick, and *Auripigmentum.*

PARAG. XXXIV.

A ſeparatoon of extrinſecal ſulphur of Venus *for the production of her ſon* Cupid.

COpper (and alſo iron) is next in nature to gold by reaſon of a great mutual affinity, as experience teſtifies. Very probable it is therefore that it may be ſo purged, if ſo be the art of which *Paracelſus* in his book *Vexationum* ſpeaks, were known to any that it may ~~leave~~ behinde it gold and ſilver in the cuple; that which cannot be done by the ignorant. My ſecret reſpects chiefly that mine of copper which is found neer the mines of gold, and not every ſort. If that ſuperfluous combuſtible ſulphur be ſeparated by water, there is found pure gold. But this art cannot be practiſed in a greater quantity, demonſtrating only the poſſibility of the art, but not promiſing riches; out of which haply ſome profit may come, if it be made with the true *Venus* after a right manner; but this ſhall be demonſtrated more at large elſewhere, but not in this place. But this I would here have you know that the ſuperfluous ſulphur of the mine of copper is not to be taken away with the burning of common fire, according to the manner of them that deal in minerals, but ſpiritualized with a certain ſecret fire, by which its proper body may be amended, and exalted as to become partaker of a golden nature. For ſuch copper mines being melted and purged after the common way yeeld not gold but ſilver only: whence it appears that they attaine to perfection, not but by that ſecret fire of lotion or gradation. For skilful Chymiſts have not only that common fire, but alſo another, by the help whereof metals are tryed and melted; without the knowledge whereof metals cannot be rightly handled. As for example; in the common melting, and burning of minerals, which is done by a common fire, the volatile part of the metal, which is the ſpirit and vegetable life thereof is driven away by the force of that fire, the more fixed & thick part being left. But if the more impure parts only be by any peculiar fire ſeparated, the gradatorious ſpirit being left with the body, there is found a better and more excellent body then that which is melted in a violent common fire. The greateſt ſecrets lye in fire as being the ſtrongeſt element, but of theſe nothing is manifeſt to the vulgar Philoſophers and Chymiſts. In the droſs that is caſt away, undergoing a greater force of fire there lyes ſomething of what is perfect, which is drawn from thence, if they be melted againe after a peculiar manner, which laſt operation is not but by a common fire. But this amending of copper proceeds from a certaine fire that waſheth, purifieth, and exalteth. I have often tryed the mine of copper by both fires, and I never found any thing but ſilver to be melted thence by that common fire, as well after as before fixation and not gold but by that ſecret fire only gold and no ſilver. As alſo tin tryed by the common way yeelds only ſilver; but being reduced into aſhes and droſs, yeelds not ſilver but gold, as having paſſed the greater force of fire. This therefore is to be aſcribed to fire, operating diverſly according to the diverſity of the regiment thereof. Wherefore the differences of fires is to be known, for one deſtroyes and the other digeſts, and maturates metals; one mundifies and waſheth; another penetrates, heats, exalts, and tranſmutes metals into a better kind, ſo that it may be truly ſaid: *In gold and ſalt are all things.*

Beſides the hot and dry fires, there are alſo found thoſe that are cold and moiſt, having no affinity with thoſe, by the help whereof nature doth as well in the bowels of the earth, as out of the earth, like an artiſt deſtroy, and regenerate metals; of which you ſhall ſee more amongſt the Philoſophers, and I could ſay more if it were needful. But why? Mention made of unknown ſecrets begets envy. Out of old cloth I will not make a new garment; becauſe there are ſome Authors of new books, that know nothing but what they have read or heard. As for my part, I had rather be ſilent, then publiſh ſecrets, or write or repeat things already writen. For its all one to write ſecrees, or common writ things, *viz.* in this age. Wherefore I thought it better to give others an opportunity of ſearching out ſecrets, then to publiſh and communicate them to all indifferently. Let it ſuffice therefore what hath been ſpoken of the difference of hot and cold fires, by the help whereof metals are as well within as out of the earth, generated, and deſtroyed: Of which I have decred more at large to treat in my book of the *Original of Metals*, where what is here wanting ſhal not be omitted.

PARAG. XXXV.

The ſeparation of ſilver from the teſts, which entered into them in time of trying without melting, and without labour and coſts.

THis is for thoſe that want conveniences of melting their teſts, for the ſeparating of ſilver, which together with the lead entered into them in the time of trying. And it is a very eaſie ſecret, without coſts and labour.

PARAG. XXXVI.

A cheap preparation or making of moſt fine earthen veſſels, like to the porcellane, retaining ſpirits, reſiſting the fire, and to be made in any place of the world.

WE can ſcarce be without thoſe earthen veſſels, as in houſhold affaires, ſo in a Chymical elaboratory, and

Apothecaryes ſhops, wherefore mention is made of them not without cauſe. For the houſhold affaires, there may be made baſons, diſhes, cups, pots, &c. For an elaboratory, alembicks, cucurbits, retorts, platters and other neceſſaries. For Apothecaryes ſhops, pots, greater or leſſer for ſyrups, conſerves, electuaries, and for waters of hearbs in defect of thoſe of glaſs. And ſuch veſſels may well be preferred before thoſe of glaſs, becauſe they are not ſo ſoon broken, and retaine any ſubtile, and ſharp humidities. They are alſo to be preferred before pewter baſons and diſhes, becauſe they do as well in winter, as ſmmer retaine their cleaneſs; and more eaſily made clean without waſhing.

PARAG XXXVII.

A confection of Allome exalting, and fixing any colours: eſpecially requiſite for ſcarlet and other pretious colours; As alſo a preparation of a cauldron that ſhall be cheap, and not alter colours.

THis allome is not to be ſold, becauſe it is made by art of ſome certain minerals, having this vertue, as to be able to fix, and exalt colours of any kind that they ſuffer no injury from the ſun, aire, water, which do otherwiſe alter colours, to which buſineſs is required alſo a certain peculiar cauldron.

For diers of ſcarlet know that the ſcarlet die which is the beſt, and moſt pretious of all colours, is altered in copper cauldrons, wherefore they are wont to cover them over with tin, or to make them of tin. But this our allome and our cauldron are far to be preferred before thoſe vulgar, although they are ſold at a cheaper price; wherefore this art is not to be ſlighted, becauſe much profit may redound to the poſſeſſours thereof.

PARAG. XXXVIII.

A certaine cheap preparation of colours for painting, as of purple, ultramarine, vermillian, &c. but eſpecially of a certain moſt fine white, never yet ſeen, moſt like the fineſt pearles ; alſo of a ſilver, and golden colour.

THe aforeſaid colours were yet never common, nor could be made ſo plentifully, and with ſo great profit as now, &c. whileſt therefore theſe ſerve for the art of painting, whereby for memories ſake as well ſacred, as profane hiſtories are painted, it will not be amiſs if they be taught ; becauſe we can hardly want them: And although it ſeem a mean, yet it is a moſt uſeful art, and alſo profitable, becauſe thoſe colours are much uſed in many places, whence much profit muſt of neceſſity redound to the poſſeſſours thereof.

The concluſion.

LET no man doubt of the truth of what hath been ſaid in theſe Annotations.For nature and art can do many things, but our art is little in vegetables,and almoſt nothing in metals, and this is the reaſon, that things never ſeen or heard, ſeeme incredible and monſtrous to the ignorant. Wherefore I proteſt, and proteſt againe that theſe my writings are neither dreams nor trifles, but true natural ſecrets. For nature is rich, and the earth is ful of hid treaſures; that which is believed by few. And not only within, but alſo without in the circumference, the treaſures of the earth are to be found in abundance, although we know not the manner of finding of them out. I will now ſay nothing of the fineſt clay, ſand, and ſtones, nor of the baſer and abject minerals, out of which gold and ſilver may be ſeparated, being eaſily to be found in any part of the earth without coſts. Moreover in what places there have been metals melted many yeers ſince, and ſtill are melted, there are great mountaines of droſs, out of which according to art, gold, and ſilver (left in them) may be melted. It ſeems as if God had by his divine providence reſerved ſomething for our good for us his diſobedient children in Europe, and eſpecially in Germany, (being chaſtiſed and deprived of outward comforts by ſtrange Nations for the impiety of our lives) which formerly we could not in time of peace, but now in time of war our enemies might uſe. As we alſo by nature being corrupt uſe providence for the ſakes of our diſobedient ſons, conſuming a patrimony ill, which hath been gotten wel; laying up mony for a certaine time of extream need, that they do not altogether deſpaire to the infamy of their parents, and may return to a better thriftineſs, and be reclaimed.

And why may not that moſt high and wiſe God, our merciful Father, ſeeing our penitency provoke us by his reſerved treaſure to a due gratitude and repentance and obedience. God doth nothing in vaine, being not ignorant of what he hath to do, and what may profit us; who without doubt ſeeing our filial obedience will provide for us with his divine bleſſing both temporal and eternal.

And truly it ſeems as if upon this account the whole Provinces may riſe againe, for after that ſome have gotten riches, they may be able to help others either by lending, or giving them wages for working and doing buſineſſes for them. But let no man wonder that I ſaid that ſome good might lye in abjected droſs, ſaying, If there be any good in them, why was it not melted by our Anceſtours? I anſwer, though it be granted that at that time nothing more could be drawn out by the violence of the fire, yet it doth not follow that there can no good be drawn from thence now.

For, firſt of all refiners, as well thoſe of former yeers as latter are not ignorant that the droſs that hath been caſt away and left for ſome yeers in the aire, hath oftentimes been again impregnated by reaſon of a magnetick power, and hath afterwards yeelded more and better metals then before (of which thing let the ignorant ſee the books of them that treat of Minerals and Metals) for in this art there is not uſed any ſingular art, but that which is common and uſed in all places.

Secondly, there may alſo from the droſs of ſome metals (whether impregnated from the elements or no) by a certain ſecret may be drawn forth, and melted gold and ſilver, when as before there could be none found in them. But thou wilt ſay, How could that be, that in the firſt fuſion imperfect metals could be produced, but in a repeated liquefaction, *viz.* of the droſs, gold and ſilver is produced. But I anſwer that all imperfect metals containe in them ſomething of what is perfect, which by the tryal of cupels cannot be drawn forth, unleſs they be deſtroyed and converted into droſs (of which thing elſewhere) for imperfect metals contain much incombuſtible ſulphur, which doth not ſuffer a ſufficient purification of them in the examining of them by cupels, but cauſing a combuſtion of the good together, and a converſion of it into litharge, entring into the ſubſtance of the cupels: but the remainders of the metal, which could not be melted by that moſt vehement fire of the firſt liquefaction being by combuſtion turned into droſs, hath ſuſtained a greater violence of the fire, then that which was melted the firſt time, wherefore being more purified is made more neer to gold and ſilver then that metal, from which it was ſeparated. He therefore that knows how to melt that droſs, in which oftentimes there is much left, eſpecially the droſs of tin, and that with a fit addition, ſhal without doubt finde better metals, then thoſe which were melted by the diggers of the minerals the firſt time. Now I do not ſay that there is ſo great a power in common fire to puririfie and perfect baſer metals.

Fire indeed hath a greater power to purifie and maturate metals, but it is too violent for thoſe that are volatile. Without doubt there are alſo other things that can help the fire, which being known we may eaſily be able to do great things. And becauſe it hath been ſaid in the foregoing Paragraphs, that ſome metals cannot yeeld that gold and ſilver that is hid in them, unleſs they be firſt deſtroyed, and reduced to droſs, it is not needful to deſtroy thoſe metals for profit ſake, ſeeing there are found in great quantity metals deſtroyed, and brought to droſs already, out of which thou maiſt draw forth gold and ſilver for to maintaine thee. But eſpecially ſome certain droſs of tin is commended, that comes out of a certain mine thereof by reaſon of the abundance of gold, as I can witneſs by my one experience, and that indeed not without cauſe; and although all tin be of a golden nature, yet that (which is called in Germany *Saiffen Zinn* from ſope) is doubly golden; and that indeed firſt by reaſon of the gold that is accidental to it, where alſo commonly graines of gold are found, which whileſt the mine of tin is waſhed, becauſe they cannot be ſeparated by the help of waſhing, are mixed with the tin in the infuſion; which oftentimes refiners know; but of the manner of ſeparation they are ignorant. For oftentimes there is found tin, of which a hundred pound weight is ſold for the price of twenty, or twenty four ryals, which containes gold of a greater price in it. But what is your adviſe worth if it cannot be ſeparated without loſs, for all that which is ſeparated by lead after the common way cannot have ſo much in it, becauſe the greater part thereof is turned to droſs; and if it were granted that it were not turned to droſs, yet the charges expended for the ſeparation of tin by lead would exceed the price of the gold contained therein. Now thus much information being given, let no man doubt but that ſome at laſt will finde out this ſecret, whom alſo I ſhall aſſiſt as much as I can with my counſel.

And that which hath been ſaid of the droſs of tin is alſo to be underſtood of the droſs of other imperfect metals, yet not ſo as if all without any difference had gold in them, and truly the droſs of iron, which hath undergone a great force of fire being converted into green or blew glaſs (out of which ſome have extracted gold, by common *Aqua regis* but without profit, for the coſts that have been expended have exceeded the price of the gold that hath been brought forth) are to be preferred before others that have not undergone ſo great a force of fire. But there be ſome, that do affirm that a true tincture may be made out of that droſs, tranſmuting imperfect metals into gold; but this I leave as being not experienced therein, treating only of thoſe things which experience hath taught me, giving my teſtimony of the treaſure that lies in iron, which you cannot draw forth from thence by the ſeparation of Antimony, of which above, ſo eaſie, or by other wayes and mediums, expecting your ſelf the ſtronger, ſo as to be the victor taking away the ſpoyle thereof: for there is no one that ſhall not at ſome time finde himſelf the ſtronger, ſo as to be able to diſpenſe to that as he hath been diſpenſed to by others. That old Saturne of a moſt vile aſpect is the higheſt in the firmament, and can do many things in metallicks, without which we can do nothing that is of any moment; wherefore deſervedly is he to be honored above the reſt. But this ſeparation may be practiſed not only about the abjected droſs of metals; but alſo about metals themſelves, if they may be procured at an eaſie rate, as now in the time of war, where in the ſpace of thirty yeers ſuch abundance of copper and tin hath been tranſported from elſewhere into great cities and ſold of a low rate, that the owners thereof have been conſtrained to tranſport it with their ſhips to other places. Now if any one had known this ſeparation, might not he have got great riches from thence as well as by the culture of the mines, and withall reſerve the metals, and being preſerved in ſeparation to diſpoſe of them for metallick uſes, *viz.* Eccleſiaſtical and martial, as for the making of bels and guns? by which means the greater part might have been keept in his own country, which otherwiſe muſt be carryed into other Provinces with great loſs, by reaſon of the want of thoſe that are skilled in metallick affaires. But no wonder that ſo little is now done in Alchymy, ſeeing moſt Chymiſts have no knowledge of metals, which being wanting, the Chymiſt is alſo wanting, whether learned as unlearned: for this knowledge is not got in the univerſities, conſiſting in a profound ſpeculation, and daily practiſe. Formerly amongſt the Chaldeans, Perſians, Arabians, and Egyptians, arts were more honoured, then now amongſt Chriſtians, choosing a magiſtrate out from amongſt the wiſe men, whoſe Kings brought up their ſons in Philoſophy. Chymiſtry eſpecially was very famous amongſt the Egyptians, by which they did get wealth and great riches; ſo that *Diocletianus* the Emperour could not overcome them till he had burnt all their books. In which time arts were had in great eſteem as it appears by that annual ſalary of *Alexander* the great, which he gave to *Ariſtotle*, *viz.* four hundred and eighty thouſand crowns, & by thoſe 3000. aſſociates which he joyned to him for the ſearching out of nature. But now *Thraſoes*, *Sycophants*,

phants, and *Morions*, wiſe men being neglected, are honored, whence this preſent calamity of ſo many countries and cities, &c. In brief, arts, and ſciences are now ſo rare, as is ſnow in hotter countries in the middle of ſummer. For pride doth not permit honeſt tutoring and education, ſeeking nothing but wealth and riches, which if any one have he is honoured without reſpect of his worth and vertues. Some have perſwaded themſelves that it derogates from their honour to bread up their ſons in honeſt arts, being content with a patrimony for the conſervation of their condition. But it often appears how a patrimony ſufficeth, when riches and wealth that have been ill gotten are taken away by ſome miſhap at ſea and land; are; for then they ſtand like butter againſt the ſun, when their riches is loſt, nothing remaines for the ſupport of their lives, who therefore are not in a little danger. I wiſh the time would once haſten, when vertues ſhall be embraced in ſtead of vices, and children ſhall be educated in good arts, for then ſo many calamities would not abound in the world, nor ſpoiles or man-ſlaughters, but men would live in peace, and get their bread with the ſweat of their brows without wronging their neighbour. And this thou haſt heard concerning the remaining honeſt mediums that conduce to the honeſt maintenance of a family without uſury, or fraud, or the violence of the ſword. For thoſe things which have been gotten by fraud, and deceit,or by war,do for the moſt part periſh as being contrary to the Scripture and the good of our neighbor. It is better therefore to leave to every one his own, and to get in the ſweat of the brows, according to the will of God, an honeſt living, that which may well be done by the way that I have now demonſtrated : although hitherto no profit hath come to me from theſe moſt ſecret arts, for certain cauſes, neither (God willing) ſhall I hope that hereafter there will, yet I am contented with the knowledge of nature. In the interim I hope I ſhall once again by the bleſſing of God ſee my moſt deſired country, where I may be able to labour, and maintaine my houſhold affaires honeſtly : and then indeed I ſhall be able to ſet forth and publiſh ſomething more, and that more boldly. For I am reſolved to write a *book the like to which was never ſeen*, very profitable for many men for the ſuſtaining of life: For as a woman with child deſires nothing more then to be freed of her burden: ſo alſo I, that I may as a divine inſtrument be helpful to my neighbour, according to the talent that God hath truſted me withal. Now I lack nothing ſo much as time: For every wiſe man may eaſily conjecture what great paines I have been at (I will not ſay coſts) in this place where all things are moſt dear in ſearching out the ſecrets of nature only, ſetting aſide greater labours. I will ſay yet one thing more, and that ſincerely, *I am conſumed by ſerving others.* If I were given to covetouſneſs I would practiſe but only one ſecret, which I knew long ſince, and I could thereby get great riches; that which I will not do, for my genius hath not ſuffered me to exerciſe things that are perfectly found out, or any mechanick art, like an aſs that daylie carries hither and thither ſo many ſacks, but would that one ſecret being found out I ſhould finde out another, and indeed from another ſecret being found out already, for alwayes one opens the gate to another. That which hitherto I have done without ceaſing, and without any conſideration of coſts, or labour for the good of my neighbour; neither ſhall I ceaſe (God permitting) until I come unto my deſired way. In the mean while I am reſolved to ſerve my neighbour by things found out and tryed; hoping that thoſe that are honeſt will take my ſtudies in good part, not regarding the wonted contumelies of cavillers (from whence there is no profit) betraying at length their great aſs-like ignorance.

I will conclude therefore, and refer the Courteous Reader unto the reſidue of my books, that treat of thoſe ſecrets more plainly, which I am reſolved ſhortly to put forth. Farewell therefore Reader, I recommend thee to God the Father of lights.

To the Malitious.

WHoſoever thou art, O malitious carper, marke what I ſay, Do not deſpiſe things unknown, for there is no man in the earth can pleaſe all. Be therefore cautious in thy actions. Do not judge without judgement, leſt thou thy ſelf be at laſt judged. Truth ſhal remaine, when haters of truth ſhall periſh. And if thou haſt companions of iniquity, yet thou ſhalt not ſtand, nor eſcape puniſhment. Wherefore do not touch the innocent, that ſeeks nothing but thy good; and ſhews the right way to get wealth and honour. If thou haſt any thing better communicate it; there is no body will hinder thee: if not, bridle thy tongue, and do not carp at him that is through the bleſsing of God, eminent in arts; or elſe thou wilt not eſcape the vengeance that hangs over thee; from which the Zoiles were never free, from the creation of the world, and let theſe things being candidly ſpoken be for thy admonition.

FINIS.

OF THE TINCTVRE OF GOLD,

Or the true
AVRVM POTABILE;

VVhat it is, and hovv it differs from the falſe and ſophiſticated
AVRVM POTABILE,

How it is to be Spagirically prepared and how to be uſed in
MEDICINE.

By JOHN RUDOLPH Glauber.

LONDON,
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OF
AURUM POTABILE.

THere is no man that can deny, that the true and ancient Philoſophers did ſtudy long life,and the conſervation of their health. Whence it came to paſs that they did diligently ſeek out the ſubject of preſerving health,and prolonging life: wherefore by the help of fire they did practiſe the ſeparations, and proofs of all vegetables, animals, and minerals, ſeeking out their powers and vertues: Who found out the greateſt harmony of all things as well in the heavens, as on earth betwixt the Sun and Gold, Man and wine. For it cannot be denyed, that the life of all things proceeds from the heat of the Sun; wherefore they ſought to unite gold,the terreſtriall ſunor body fixed and perfect,cauſed by the rayes of the Sun, with man by the help of ſpirit of wine.

But haply there will be ſome, whom this my narration may offend denying that gold is the Son of the Sun, or a metallick body fixed and perfect, proceeding from the rayes of the Sun; asking how the Solary immateriall rayes can be made materiall and corporeall? But they are very ignorant of the generation of metals, and minerals. And although I am not now reſolved to write of the generation, and originall of metals, yet endeavouring to demonſtrate that there is a vivifying power of the Sun to be found in gold (deſtroyed and volatilizated) and to be prepared into a moſt wholeſome medicine for man, I will not omit for the ſake of the ignorant and incredulous, to demonſtrate the truth by one or two examples, which although I could demonſtrate by moſt certain and firm reaſons, yet for brevities ſake I am now reſolved to omit them, recommending to the ſearcher of the Nature, and propriety of metals, my treatiſe *De Generatione Metallorum*, which without doubt will take away all ſcruple from him; objecting only againſt him that oppoſeth the truth, two queſtions and reaſons which are to be confuted: and the firſt is, whence comes that increaſe of both the quantity and quality of any viſcous, minerall liquor, that hath been expoſed long to the Sun in an open glaſs veſſell? Whether from the Sun or elſewhere? But thou ſayſt that that increaſe comes from the air, the vehicle of all things. I anſwer, if from the air, whether was not that air impregnated by the Sun? and whether there be any thing in the air, which it received not from the ſtars? But place this liquor in a cold cellar in a moiſt air, and thou ſhalt by experience know that no weight is added thereto, even as in the Sun, or (in his ſtead) fire: that liquor will draw ſome phlegmatick moiſture which will be eaſily ſeparated by heat, the weight of the former liquor being left. This may be ſhewed by this example: diſſolve ſome ſulphureous metall, as Iron, Copper, or Zinck, with any acid ſpirit, and at length take away the ſpirit, make the remainder red hot; yet not too much, but as much as ſufficeth to take away the ſpirits, which afterward (its weight being obſerved) put in a crucible on the fire, but take heed leſt the metall run over, but at length let it darkly glow with the crucible, for the ſpace of three or four weeks, which done, take it away again, and weigh again the metall, and thou ſhalt finde the evident increaſe of the metall, which thou ſhalt perceive more evidently by this way, as follows; put copper, or ſome ſulphureous metall with 16 or 18 parts of lead in a well burnt cupel;made of the aſhes of wood,or bones in a tryed ſurnace(the weight of the cupel;copper and lead firſt exactly obſerved)and cauſe the copper to evaporate by fire with the lead, which done take the cupel when it ſhall be cold,and again weigh it,and thou ſhal find it far more weightly,ſo that itsweight(though much of the lead goes into air in the cupellating)not only exceeds its former weight,but alſo of the copper and Lead by the ſaid cupellation;therefore it is juſtly demanded whence this increaſe proceeds , whether the heat of the fire was not coagulated into a metallick body by meanes of that melted metall ? Therefore it is probable that if you knew the metallick matrixes in the ſurface of the earth in which the beams of the Sun and the heat of fire being received may be coagulated, metals may as well be generated in them as in the bowels of the earth.

But thou replieſt it is probable the heat of vulgar fire to have ſome thing metallick in it, which comes by attraction of the melted metall in the Corbill,but not in the Sun-beams.

He that will thus try the truth, let him put the cupel very well burnt in the beams of the Sun , together with copper and lead, to which let him adde a hollow looking-glaſs, ſo that it may be operated upon by the Sun-beams gathered into a center and may thence be made hot:But thou muſt continually hold the Looking-glaſs in thy hand that thou maiſt turn or direct it to the Sun according to the courſe thereof, leſt the cupel wax cold, the beams of the Sun being turned away,but if it be rightly obſerved,a work ſhall be done no leſs than in a ſurnace of fire with glowing heat.

You muſt have a looking-glaſs at leaſt in *diameter* two feet, nor muſt it be too deep ; but bee in depth the 18 or 20 part of the globe, that ſo it may the further caſt beams : it muſt be very artificially ſmoothed, that it may more exactly gather beams to the center. Now the preparation of theſe Looking-glaſſes is not of this place, but ſhall be in the fourth part of our Furnaces,where wee ſhall teach not only how it is to be made of metals,but alſo of glaſs,and how poliſht and uſed.

This demonſtration which may be otherwiſe omitted is therefore ſet downe that it may be knowne how Gold proceeds from the Sunne, and is ſecretly endued with its proper ſtrength and proprieties by Chymiſtry, reducible into that which it was before its coagulation, namely into a heating and living ſpirit, communicating its ſtrength and faculties to mans body. Therefore the Ancients uſed great diligence in the melting of gold, in which nothing is found more excellent then the pureſt and fineſt ſpirit of wine made by diſtillation, and they did not uſe common gold melted out of ſtones or waſht out of ſand, but purged by benefit of fire, & Philoſophically quickened and unlocked, not by help of corroſive ſpirits, the uſuall way of vulgar Chymiſts, but by ſome water which Nature freely gives without help of violent diſtillation; by which they manifeſt that which is hid in gold, and they have hid what is manifeſt, and therefore they have made it fit for the ſeparation of its tincture from a groſs and black ſuperfluous body. For they knew that the compact body of gold hath no affinity with vitall ſpirits, therefore they have choſen onely the fineſt part of gold to their Elixir, *viz.* its tincture which they have radically joined with the ſpirit of wine, and being joined have made them ſpiritual or volatile, ſo that neither can be ſeparated from each other in the fire, and being in the fire are ſublimed or fixed with a longer digeſtion, and coagulated into a fixt ſtone, which they count for the greateſt treaſure in this world. Therefore the ancient Philoſophers affirming that there is not a better medicine under the Sun than it, which is made from the Philoſophicall union of wine and gold, both by an inſeparable recoagulation and fixation; nor without gold can ſpirit of wine, nor this without it be made a medicine, becauſe gold without ſpirit of wine cannot be made volatile, nor this be coagulated and fixt without it. We therefore their poſterity juſtly follow the opinions of the moſt famous men, not for their authorities ſake, but for ocular demonſtration which is the trueſt tryall.

Therefore the knowledge of the preparation of this medicine

cine being beſtowed on me from the higheſt, I have intended, becauſe a man is not born for himſelf, briefly to deliver its preparation and uſe: but I will not caſt pearls before ſwine; but I'le only ſhew the way to the ſtudious ſearchers of the work of God and Nature, who doubtleſs will underſtand my writing, but not the ignorant and unskilfull; let therefore the brevity of the preparation offend no man, becauſe I mean not to proſtitute this Art (divinely obtained, not with idleneſs, but with much watching, labours and pains) nor give to the unworthy a bit before chawed but only to communicate it to the pious, who ſhall ſee with open eyes that the thing is ſo. I deſire therefore the ſimplicity of my ſtile offend no man being not adorned with rhetoricall figures after the wonted manner, for truth wants not many and elegant words, being contented with ſimplicity and brevity, with which it is eaſier and better demonſtrated, then with thoſe intricate and ſophiſtick diſcourſe s

Before I will begin the preparation, I will briefly deſcribe the qualities of a true ſpagirick undertaking ſo great a work, that every one may examine himſelf, that takes this task upon him. For it doth not ſuffice to know to make fire, or to diſtill vegetable waters, but the true knowledge as well of the fruits of the ſuperior as inferior elements is required, and eſpecially piety.

Not prating, but much knowledge makes a Chymiſt, there is no man, who can deny, that the Art is long ſince ſought by divers for many years, even untill this day, with much labour and charges; but found by very few. I doe not wonder that ſo great a gift of God hath hitherto been communicated to very few; for all modern Chymiſts (very few excepted) have gone a wrong way. For ſome truſted to their riches, thinking violently to get the Art, becauſe they were able to make a fair elaboratory, maintain many journey men and get ſtore of veſſels, minerals, and coals, not conſidering the ſaying of the Apoſtle, *'Tis not of him that willeth, or him that runneth, but of God only that ſheweth mercy.*

Others whoſe learning conſiſted in divers tongues were honor-honoured for their elegancy of prating, attributing skill only to themſelves, and perſwading themſelves that they had all the elements at their beck, for their ſuppoſed wiſdome and learning, not conſidering the work of Chriſt, *thou haſt revealed it to little ones, and haſt hid it from the great and wiſe.* Who perſwade themſelves, that they ſee graſs grow not knowing the earth its mother, to whom if all things ſuceed not according to their pleaſure, they fear not to ſlander the moſt pious Philoſophers, and to impeach them of falſehood, and to palliate their ignorance with the nullity of their art; who would judge that the thing is far otherwiſe if they knew the myſtical meaning of the Philoſophers, but becauſe they are blinded with pride; no marvell if they take the ſhell in ſtead of the kernell, and ſo come not to the wiſhed end.

The third ſort is of covetous ſlothful men, ſeeking wealth of thoſe mountebanks, being as ignorant of Chymiſtery and Nature, as thoſe they teach, having neither knowledg of minerals nor metals, nor underſtanding the works of the Philoſophers, with whom if one diſpute of the nature and proprieties of metals, they have nothing to anſwer, but what they read and hear, *viz.* it is ſo writ, and ſo we have proceeded, and thus we muſt proceed, and ſuch a matter and no other is required, keeping cloſe to the letter, not conſidering whether the Authour of his proceedings be skilfull or not, whether he hath borrowed his writings from the experience or readings of other books, to whom although a true and genious information of the nature and the knowledge of minerals and metals, and Chymick ſecrets ſhould be delivered, yet they would not beleeve, deſpiſing plain truth as folly in her ſimple labors, which are, not chargeable nor tedious. Wealth is ſought by ſuch like covetous fellows, ſpending in ſome proceſs of no worth ſome hundreds or thouſand crowns, ſuppoſing the art to be venall, not conſidering that the Merchant will keep a good and ſure art to himſelf, and not ſeek mony of others.

I doe not deny that ſome Artiſt may be the poſſeſſor of ſome ſecret, or thing found by his own experience, or diſcloſed to him by ſome friend, which for poverty he cannot effect, and therefore hath need to crave the help of others, for not alwayes wealth and skill meet together, which deſervedly are helpt by thē rich, truſting to Gods bleſſing.

But this caution is to be taken, leſt there be a half-pennyworth of profit in time of harveſt from a crowns worth of corn, both of wealth and credit. Who is ſo blind, though but with one eye, who doth not obſerve the trifles of ſuch like covetous boaſters? although the Sun by Gods mercy doth ſhine on both good and bad, yet it was never heard that ever any true Philoſopher handling ſecrets ſecretly was a prating trifler. And it is much to be wondered at, that the learned of this age have been ſo blinded, that they would be gulled by ſuch vagabond knaves.

The fourth kind of ſeekers are men of a different condition, not ſeeking wealth and honour but Gods glory and their neighbours profit, contented with mean food and apparell, not proud and vain-glorious, but pious and honeſt, handling coals in ſtead of gold rings, not the companions of many men, ſilent knowers of naturall ſecrets, ſeeking and finding by Gods aſſiſting grace, not truſting to the writings of the Ancient Philoſophers, but to God the prime teacher of all things, whoſe mercy is the ſame now, as it was in the time of thoſe Philoſophers, which obtained their Art with earneſt prayers from God. Unto theſe came Arts beyond hope and expectation, and the uſe and method of uſing them.

Therefore all that undertake this Art, let them diligently examine themſelves, for none of this laſt number will be furthered by their wealth and conceited learning, becauſe this skill is the gift of God alone, and not man. Therefore the proprieties of a true Chymiſt, reaping the fruit of the Golden tree being known: I will now begin the preparation of the tincture of Gold, by the hand of a skilfull and excerciſed workman, and will ſhew the difference of the true and falſe tincture, and the phyſicall uſe of the true gold, to expell many diſeaſes, as follows.

℞ of living gold one part, and three parts of quick Mercury, not of the vulgar, but the Philoſophicall every where to be found without charges and labour (thou maiſt alſo adde living ſilver of equall weight with the gold, and indeed better then only gold for the greater variety of colours proceeding from the mixture of male and female: but one perſwaded that better tincture proceeds from gold alone may mixe gold only, not ſo, one skilfull of metals, who knoweth the power of the cordiall union of gold and ſilver diſſolved in one and the ſame *menſtruum*) put them mixt in a Philoſophicall veſſell to diſſolve, and in the ſpace of one quarter of an houre, thoſe mixt metals will be radically diſſolved by Mercury, and will give a purple colour; after encreaſe the fire by degrees, and it will be changed into a very fine green, to which taken out, poure the water of dew to diſſolve, which may be done in half an houre, filtre the ſolution, and abſtract the water, through a glaſs alembick in B. which poure out again freſh, and abſtract, which doe three times, in the mean time that greenneſs will be turned into a black colour like ink ſtinking like a carkaſe, and therefore odious: and it behoves ſometimes to take away the water reaffuſed and digeſted, and that blackneſs and ſtink will depart in the ſpace of forty houres, and will produce a pure milky whiteneſs, which appearing take away all the moiſture till it be dry, which will be a white maſs and in few houres of a pleaſant colour, divers colours firſt appearing it is turned into a fine greenneſs better then the former, to which you muſt affuſe the ſpirit of wine well rectified to the depth of two or three fingers, and that green gold diſſolved will draw that ſpirit of wine for the great amity like a dry ſpunge drawing water, and will communicate to it a quinteſſence as red as bloud, by which meanes the greenneſs is deprived of its quickning tincture, the ſuperfluous aſhy body being left.

You muſt decant and filtrate the tinged ſpirit, and in a B. by a glaſs alembick, abſtract it from the red tincture, attracting the fiery eſſence of ſpirit of wine, ſo that they may be very cloſe and inſeparably conjoined, ſor which an unſavoury water only diſtills, the vertue of the ſpirit of wine left with the tincture of gold like a red fiery ſalt, fuſile and volatile; of which graine 1. can tinge ℥ i. of ſpirit of wine, or any other liquor, with a bloud red colour, for it is ſoluble in any moiſture; and therefore may be kept in a liquid form for the Panacea of moſt deſperate diſeaſes. Now I will communicate the proprieties of the true tincture by which true potable gold is known. This tincture next the ſtone is the beſt of all medicines, betweene which and that there is but this difference, the ſoule of gold is volatile nor hath entrance into imperfect metals, & therefore cannot tranſmute into pure fine gold, which vertue is attributed to the Philoſophers Stone. The ſoul of gold though it be the beſt part, yet it is not fixt in fire but volatile; but the Philoſophers Stone is fixt in fire and remains by reaſon of a longer digeſtion. But whether that ſoul or volatile tincture, and red Lion may be fixt by help of fire, may be turned into the Univerſal medicine, and tinging ſtone, that I know not; becauſe hitherto I have not tryed, &c. therefore he may who extracts the ſoul of gold make further tryall, whether he can finde any thing better. For this work treateth of nothing but the beſt medicine of gold, but other things I know not.

Therefore the deceit of the Diſtillers of wine, and other vegetable waters, ſelling potable gold, is not unknowne, being not aſhamed to ſell any water colored yellow or red to the ignorant, for a great price. And the errour of others, diſſolving the body of gold in *aqua Regia*, or ſpirit of ſalt, which again they abſtract to a dry remainder, to which for extraction they affuſe the ſpirit of wine: which is not an extraction, but ſome particular ſolution of gold, made by help of corroſive ſpirits left in the gold, tinging the ſpirit of wine with a yellow colour, which ſo coloured they call their potable gold, which notwithſtanding is reduced into gold, the ſpirit of wine abſtracted, which can doe more then any other *Calx* of gold, which the *Archeus* cannot digeſt, but ſeparates being indigeſted, with the excrements. And alſo it is the error of others, ignorantly deceiving themſelves and others, extracting the calx of gold with peculiar *menſtruums* and ſpirits; knowing not that the *menſtruum* affuſed to gold to be red of it ſelf by a long digeſtion, which decanted, they adminiſter inſtead of potable gold; who if they weighed the remaining calx, would by experience ſee that nothing departed from the gold; which you may try by ſetting the ſpirit or *menſtruum* in a remiſs heat, or longer in cold, which of it ſelf doth wax red, as it had been affuſed to the *Calx* of *Sol.* But the cauſe of this redneſs is (unknown to them) nothing but a certain nitrous ſalt and volatile, as of Antimony, Urine, Tartar, Hartshorn, Haire, &c. exalting the colour of any Sulphur.

Wherefore it neceſſarily follows if Artiſts, mingle with the ſpirit of wine in which is a ſulphur, ſuch exalting ſalts, that it will thence be exalted in colour, and wax red! which alſo happens to them, who uſe to extract a tincture with diſtilled oyls having a volatile ſalt, as are oyl of juice of Lemmons, Cloves, of Soot, &c.

For ſuch like tincture or potable gold is inefficatious, as experience witneſſeth. But I would not ſay there is no other tincture to be prepared out of gold, beſide this tincture: for being diſſolved in ſweet *menſtruums*, that it cannot be ſeparated by precipitation, it can doe wonderfull things in many greivous diſeaſes; but alwayes the living metal is to be choſen in ſtead of dead.

But true potable gold is not ſo only in name and ſhew (as are divers waters tinged with a yellow or red color) but alſo endued with golden faculties & vertues, ſo that it may actually appear to be made of gold, but irreducible by fire into gold, ſpirituall and penetrative ſtrengthening the vitall ſpirits, that they may overcome their enemies. But it muſt alſo be endued with this vertue that it may change imperfect metals, chiefly Mercury, Lead, and Silver into pure Gold; not truely like a fixt tincture, tinging with profit baſer metals in flux; but only perfecting particularly in a moiſt way by digeſtion, where ſome part of the metall alone is turned into better. For this tincture or ſalt of gold is very volatile, ſo that it cannot reſiſt the fire; but with a gentle heat it melteth like wax, and is ſublimed like red ſalt, ſoluble in ſpirit of wine that it may be fit for Phyſicall uſes.

Alſo true potable gold being taſted, is neither corroſive, nor aſtringent like other ſolutions of gold: neither doth it pollute the hands, the nails and hair with black or yellow color; but rather makes them more fine; neither doth it infect copper, iron, tin, lead, with ruſt or a black colour, but rather maketh them more clear; neither is it a body of gold reducible by extraction, nor into white gold, which may recover its former colour by Antimony and *Aqua Regia*, but it is like an earthen wax, and ſublimable in a gentle heat like Arſenic, not enduring the tryall of the cuple, which vertues if it have it may be called the true tincture of gold: but if not, not ſo but rather a ſophiſticated potable gold, not to be medled withall.

Of the medicinall uſe of this golden Medicine.

WE have before demonſtrated, the Sun to be the originall of gold, or endued with the incredible vertues of the terreſtriall Sun. For the ſtrength and vertues of all vegetables, animals, and minerals lie hid in it; which cannot be manifeſted but by a Philoſopher, and that by ſeparation, to wit, of the intrinſecall and pure parts, from the impure.

This ſpeech will happily ſeem to thee incredible, or not very likely, to ſay that gold is reducible into a ſpirituall eſſence, agreeable to humane nature, endued with the ſtrength of all animals, vegetables and minerals. Surely thou ſhalt hardly perſwade him whom *Vulcan* hath not made a Philoſopher, to beleive it. But who will trouble himſelfe ſo much as with ſure reaſons to decide all controverſies; which if poſſible, yet for many reaſons is here omitted; but for ſureties ſake I will ſend back the Reader to the ſecond part of our Furnaces, where he ſhall finde how out of Antimony and

Sulphur, by a good chymiſt with the help of fire may be drawn not only the force and facultie of divers vegetables, but alſo their naturall odour; which yet did not appear in them before they were radically diſolved, which if it may be done by any imperfect and fetid mineral, why not alſo by a perfect and mature mineral?

If we were good naturaliſts, and very diligent Chymiſts, then we need not to fill Elaboratories with ſo many pots and boxes, nor ſpend ſo much coſt in fetching in ſo many forreign medicinall ſpecies, becauſe without queſtion the ſtrength and properties of all vegetables animals and minerals by an eaſier way, may be found in ſome few ſubjects. And as the true tincture of *Sol* well fixed is endued with all the vertues of all vegetables, animals and minerals; ſo alſo deſervedly is aſcribed to it the force of curing all diſeaſes; but with a difference. For there are divers kinds of the Gout in hands and feet, as alſo of the Stone, and Leproſie; which ſometimes are inveterate and uncurable diſeaſes, ſometimes new and curable. Who therefore not madde would promiſe to cure all and every diſeaſe indifferently, by any certaine Medicine? Certainly no man although he had the very Stone of the Philoſophers.

For oft-times the Stone of the bladder is purged away or broken being moſt hard and inſoluble by *Aqua Fortis*, which not any medicine not corroſive could diſſolve; which ſtrength although they aſcribe to their medicine, yet they cannot perform it. Promiſes therefore do not ſuffice, which none can perform: for *promiſes become debts*, which is obſerved by few; wherefore by the haters of the Art the truth ſuffers and the hope of good ſucceſs of Chymical Medicines dyeth. *It is beſt* therefore *to performe more then promiſe*, and the work ſhall praiſe the workman. How can a medicine penetrate to the extream parts of the body; to wit, the hands and feet, and diſſolve the coagulated matter waxing hard, which out of the body no corroſive Medicine can diſſolve? It is ſufficient if a medicine finding a viſcous tartareous and ſalt matter, not yet coagulated, doe diſſolve and expell it. The like is to be underſtood of the ſtone in the reins and bladder. In this manner I wil aſcribe the curing of the Gout in the hands and feet, the ſtone in the kidneys and bladder, to my tincture of *Sol*, as well in old as young; but ſo that if need be ſpecifical catharticks may be adminiſtred, and extrinſecally Bathes for promoting the cure, whereby Nature may the ſooner doe its office. But above all things we muſt not ſlight Divine Providence: For ofttimes God ſmites us with a diſeaſe incurable by Art, unleſſe Divine wrath be firſt appeaſed *by humble repentance*, which is the beſt medicine of all. As alſo the cure of all diſeaſes coming of the corruption of the bloud, as the Leproſie, the French diſeaſe, and other impurities; which are taken away by this Tincture, if withall *Cathartick* and *Diaphoreticks* are adminiſtred, cleanſing and renewing the bloud above all other medicines. This Tincture alſo takes away all the obſtructions of the Liver, Spleen, Kidneys, and other parts, becauſe it warms, attenuates, weakens, and evacuates, the originall of divers diſeaſes. It alſo cures all violent and acute diſeaſes, as the Epilepſie, Plague, Feavers, &c.

It provoketh the Menſtrues of old and young, chiefly if alſo extrinſecally it be rightly adminiſtred: which way many are well cured, who otherwiſe are like to periſh miſerably; it warms and cleanſeth the Matrix above all other Medicines, and renders it fit to perform its office: It preſerves it alſo from all accidents of *Sterility*, & other very grievous diſeaſes, cauſing death. It expels the water of the Dropſie by urine it rarifieth and dryeth up the ſuperfluous moiſtures of the internall and externall parts, like the Sun drying and conſuming waters, by which means the body recovers its prinſtine ſanitude: of other diſeaſes to write in particular it is not need, becauſe in all and every one without difference it may be uſed, as a generall medicine, in old as well as young. This medicine doth not only reſtore, but alſo conſerve health till the predeſtinated time.

The Doſe is from 3 graines or drops to twelve or more, but to children 1, 2, or 3, with its appropriated vehicle, or in wine or beer to be adminiſtred dayly, which Doſe may be oftener in a day took, reſpect being had to the ſick party.

Thou mayſt not be offended with the reproaches of the calumniator of this book (of which the Divell with his filthy lyes is alwayes the Authour) beleeving ſtedfaſtly that the time is neer, when at length by the Divine wrath theſe Goats will be conſumed like chaffe, the ſheep being not hurt, for their meat recompenſing their Maſter with milk and wool.

And ſo I make an end, hoping to have pleaſed my Neighbour: for without doubt, who uſeth this golden medicine well, ſhall doe well, chiefly lifting up his heart, (acknowleding his ſins) to God the Giver and Creator of all good, in filiall humility, imploring his help and bleſſing; which Omnipotent God and merciful Father, that he would beſtow on us his temporal bleſſing in this life with ſound health, and hereafter life eternal, of his free grace, *Let us pray, Amen.*

FINIS.

OF THE
Minerall Work,
THE
FIRST PART,

Wherein is taught the ſeparation
OF
GOLD
Out of Flints, Sand, Clay, and other
Foſſiles by the Spirit of Salt, which
otherwiſe cannot be purged.

ALSO,
A *Panacea* or Vniverſall Antimoniall
Medicine, and the uſe thereof.

Invented and publiſhed in favour of the
ſtudious in the Chymick Art.

By JOHN RUDOLPH Glauber.

LONDON,
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of the Bible in *Little-Britain*. 1652.

A Preface to the Reader.

There will be ſome without doubt, becauſe the Edition of other peices (of which I made mention in ſome former tractates a few years paſt) hath been hitherto by reaſon of divers journeys and other various impediments, neglected, who will think (having no knowledge of me) that I am unable to perform my promiſe; and there are others, who knowing my condition, and the contumelies of my enemies, will fear that I being diverted from my purpoſe by theſe reproaches, will make void my ſecret promiſes. But I have reſolved to ſtand to my promiſe, that theſe men may ſee that I am neither moved nor altered with the taunts of the envious; but that they may be convinced by reall demonſtration of my ſecrets, ſome of which, I ſhall now for the publique good endeavour to communicate. And although the ingratitude of the world be cauſe enough for my ſilence, yet the uprightneſs of my heart would not permit me to conceal thoſe things, notwithſtanding the malevolent and ungratefull. Beſide alſo the following reaſon moved me, becauſe there are ſome ambitious men, who falſly boaſt of the knowledge of divers of my ſecrets; wherefore ſome have been moved to think that mine are not mine own, but the works and writings of others; by which means I have been deprived of my due praiſe, being attributed to another. And this I have often found, that one or other having by entreaties obtained a ſecret from me, have afterward through oſtentation aſcribed it to themſelves.

There are others alſo who fear not to reproach me, and my writings, *as though they were trifles, not attaining their deſired end, who (rather then I who have written plain enough) are themſelves to be blamed, for being ignorant how to work. Such and other things might deter me, but I would not omit the publiſhing of theſe writings for thoſe mens ſake who are pious and honeſt. Wherefore I openly affirm, that theſe things publiſhed by me are not only no trifles, but moſt true, and alſo my own and not the invention of another; And I call him a lyer, who ſhall boaſt himſelf the Authour without any of my help. But of theſe enough! Yet I would have the Reader know, that for the meanneſſe of the ſtile, I am not like many writers, who more look after the flouriſh of words then the thing it ſelfe; I rather ſeek that my neighbor may profit by me. Wherefore for his better underſtanding I had rather be prolixe in words, tedious to delicate ears, then obſcure brevity adorned with rhetoricall figures. For I know that the ſtudious in the Art doe affect a prolixe, plain, and diſtinct information or inſtruction, rather then a Ciceronian or obſcure. And now in the Name of God I will begin my worke, which is moſt profitable to all, and will faithfully communicate and publiſh the ſame in that manner as it was found by me in my travell, under the title of* The Minerall Work, *divided into three parts. In the firſt of which ſhall be taught how out of ſand and golden flints, corporeall golden may be drawn by the help of Spirit of Salt. Which ſecret although it may ſeem ſmall, yet it is that whereby (a knowledge of the true ſtones and true ſand being obtained) life may be ſuſtained, and alſo the coſt laid out may be recompenſed as ſhall be proved in the following parts.*

In the ſecond part ſhall be treated of the originall and generation of metals, and alſo of the deſtruction of Minerals and Metals.

In the third part ſhall be demonſtrated the poſſibility of metallicall tranſmutation by Nature and Art, and that with divers reaſons: which demonſtration is not (unleſſe I am deceived) performed yet by any, being the foundation of all metallick Philoſophy and the Golden Crown *of all my writings. Which God grant I may perfect to the glory of his Divine name, and the good of my neighbour.* Amen.

The

The firſt Part of the Minerall Work.

A moſt profitable proceſs of the ſeparation of gold, out of flints, ſand, clay, red and black Talck and other Foſſiles, containing very ſubtile Gold, thin and ſpongeous, which otherwiſe cannot be ſeparated either for its ſcarcity or the obſtinacy of the Minerall by reaſon of the great coſt to be beſtowed; viz. *very eaſily with the ſpirit of ſalt.*

KNow firſt (good Reader) that not all ſand, clay, nor all flints, and other Foſſibles do contain gold, but only ſome, without the knowledge of which this ſecret availeth nothing. And becauſe the knowledge of theſe are very neceſſary for the Artiſt, I will ſhew how they are to be proved whether they contain gold or not, that he labour not in vain, but that it may prove to his commodity or profit.

The madneſs of men, ſearching after uncertain things is wonderful, but neglecting certain, although expoſed to every ones view: For many ſeeking the perfection of metals to gain riches, are buſied about an uncertain thing, becauſe of a thouſand ſcarce one obtaines his end: although they may be perfected and purified, I mean imperfect and impure metals, ſo that good gold and ſilver may thence be extracted, but this Art is given to few, neither is every one fit to perform the buſineſs,

ſineſs, becauſe it requires an ingenious and experienced Artiſt. But the thing which is certain may be performed with ſmall coſt and labour by any vulgar Chymiſt, having any knowledge of the Art of fuſion and ſeparation, being an ingenious man, and not ſeeking things too high or too gainfull at the firſt tryall. Be cautious therefore in the extraction of the aforeſaid ſtones, for if thou ſhould'ſt with the ſpirit of ſalt extract many of them, having no gold, without doubt thou ſhalt find no gold there: And if thou ſhouldſt extract ſome contained in them, and if thou be ignorant of the ſeparation of it by Antimony, thou canſt thence hope for no profit.

Firſt then, the knowledge, *viz.* of thoſe ſtones is neceſſary afterward of that ſeparation by Antimony. Impute therefore the fault if thou erreſt, not to me but to thine own ignorance, if thou knoweſt not to extract the gold, for I have written clearly, though thou ſhouldſt not know any thing that were omitted. And I before admoniſh thee to be cautious in thy work; leaſt thou labour for nought. For it is certain, & no fiction, that in many places there are found golden flints, and golden clay, and ſand, oft-times abounding with gold. And if they doe not abound with it, yet may they be extracted with profit: but the flints abounding with it are extracted with greater gain. There are alſo found whole Rocks and Mountains of Gold, and great mountains filled with golden ſand and clay, not returning the charge of waſhing, either for its too great rarefaction or ſpungioſity and levity by reaſon of which it's waſhed away with the ſand; all which how poor ſoever, may be extracted by the ſpirit of ſalt with gain, and by antimony fixed and purified In breif, this is ſuch a ſecret by which no man can be an impediment to another, as in other mechanicall operations, whereof no man may be aſhamed, for God did therefore create gold in the earth and ſtones that we might thence extract it to the glory of his name and the benefit of our neighbour, neither hath he forbidden the true and genuine uſe of it. I ſay therefore in truth that I have here deſcribed this Art, how ever deſpiſed by the ignorant, yet of greateſt moment and almoſt incomprehenſible. Now conſider the thing a little farther, thou ſhalt finde every where in the earth great treaſures to be hidden, which only through ignorance are not diſcovered. Truly it is known to all, that there is found golden ſand and clay in divers places, which for the aforeſaid reaſons are left unlaboured, but by this our Art may eaſily be worked upon.

There are found alſo ſilver mountaines, out of which ſilver cannot be extracted for the little weight it yeelds; there is alſo found in many places a certain yellow or reddiſh earth, or ſuch like clay, which though it contain ſtore of ſilver, yet it cannot be extracted with profit by this way, yet ſeparable, with gain, but not by the ſpirit of ſalt which leaves it untoucht, but by ſome other thing, every where to be found in plenty, of which for ſome reaſons we ſhall ſpeak nothing here.

And this way of ſeparation makes much for the poore minerall of copper, which with profit cannot be worked upon by the vulgar way, to be ſeparated from the Copper, afterward by ripening it into a better metall, or turning it into verdygreaſe for want of a better art, which buſineſs alſo may well and honeſtly more then maintain a family. This way alſo may the rejected droſs of the gold, ſilver, and copper be with profit ſeparated. But becauſe I have decreed to handle here only the extraction of gold out of ſtones, therefore theſe menſtrues which are uſed in the extraction of copper and ſilver, are deſervedly omitted, and reſerved for another place, where ſometime they ſhall be delivered, to wit, if I ſhall ſee that this demonſtration ſhall be accepted in mens eyes, which more very excellent ſhall follow. As now I have undertaken a more excellent matter in love to my countrey, by which it may appear, that *Germany* however reduced to want, is yet rich enough, if it would but at laſt look upon its hidden treaſures. There is no need to offer a fore-chewed bit, for demonſtration is ſufficient, neither will we obtrude a good upon the negligent; for to the ungratefull the beſt things are unacceptable. Theſe therefore being waved in ſhort we will give the demonſtretion and extraction of thoſe flints, not doubting but the expert, and experienced, though the ſluggiſh may not, will thence reap profit, and give God the praiſe.

What belongs then to the aforeſaid ſtones, out of which gold may be extracted, thus the matter ſtands. All kind of flints for the moſt part have inviſible gold, ſometimes viſible and inviſible, volatile and corporeal together; but many commonly contain impure iron-like volatile gold, and alſo mature, and a few ſulphureous and copper-like.

Stones which the *Germans* call *Quartzen* and *Horſtein*, containing pure and corporeal gold, although mixt with ſilver and copper, may be burnt and ground, and extracted with Mercury, and if they abound with gold, be purged by flux; which labours are uſual with diggers and dealers in metals, of which I doe not intend to write, becauſe others have heretofore writ of them. But thoſe flints *Quartzen* and *Hornſtein* every where almoſt to be found, containing but a mean quantity of diſperſed iron-like Gold, Marcaſite-like, and that either fixt or volatile, cannot be ſeparated with gain, to wit, neither by Mercury nor by Flux, wherefore they are neglected by the Miners, either out of ignorance or for the intolerable coſts. But I having tryed thoſe baſe ſtones, that how little gold ſoever they poſſeſſe; yet may it be ſeparated with great gain, I would not intermit to publiſh this knowledge for my Chriſtian neighbours ſake, not doubting but this publication will be profitable to very many. For I am not ignorant that there are as well learned as unlearned, noble as ignoble, ſecular as ſpirituall, either by war or otherwiſe expoſed to poverty, ſo that they are hardly able to maintain their family, &c. and for their ſakes and others in want. I have publiſhed this ſecret, which rightly handled may bring no ſmall gain yeerly, but eſpecially where thoſe ſtones are plentiful, and alſo that ſpirit of ſalt, whereof the deſcription is given in the 1 part of the Philoſophical Furnaces, and hereafter there ſhall be given a better, if nothing hinder; in the mean while uſe and enjoy theſe. And if it happen ſo that thou canſt not rightly perform all things of the aforeſaid tractate, bluſh not to learn the manual [Operations] which cannot be ſo exactly deſcribed from thoſe that are experienced, leſt you hereafter unprofitably ſpend your labour and coſts. As for thoſe ſtones know that very many of them are found in ſeveral places, chiefly in thoſe that are ſandy and mountainous; but in ſome more & better than in others: for there is ſeldom ſeen ſand without flints, and oft-times the ſand it ſelfe, though very little doth not want Gold. But they are very likely to be found on the ſhoars of Rivers, where the water waſhing away the ſand from the flints they are found in great aboundance, though they are not ſo eaſily known by their outſide, as thoſe which were found clean in the ſand, becauſe they are covered with ſlime. Wherefore they muſt be broken with a hammer, that that may be ſeen which is in them, what may better appear if they be burnt, and quencht in cold water. For the ſtone retaining its whiteneſs where it is burnt and quencht doth contain nothing; but acquiring a redneſs it ſhews there is ſomething in it, and the more red it is the better token it is.

N. B. But this is not to be underſtood of ſandy ſtones, waxing red in ſome part in the fire, containing no gold, but of flints out of which by a mutual percuſſion fire is brought forth, which the more pure they are the purer gold do yeeld. There are alſo flints out of which fire is forced by percuſſion, being red in the fire, which contain no gold but Iron; which you may know by that clear redneſs before the burning, which being burnt is changed into an obſcure redneſs, not ſhining and crude: but the flints containing Gold, being burnt doe acquire fair golden yellowneſs, or reddiſh colour, as if they were covered gold, and that through the whole ſubſtance if they be broken in pieces. And theſe give a pure gold, but thoſe other yeeld a red extraction like bloud, yeelding not gold, but the pureſt and malleable iron, good in Chymick uſes, (but chiefly for ſilver to be cemented and exalted) for gold is ſeldome to be found in them; that which is well to be obſerved leſt thou draw out iron in ſtead of gold, and ſo looſe thy labour.

Alſo the beſt ſtones containing gold, are thoſe which are white and ſhining, here and there throughout having in the whole ſubſtance green ſpots and lines, red, yellow, skie-colored and brown. There are alſo black flints out of which fire is forced by percuſſion, having gold and iron, which may be ſeparated with profit, yeelding ſometimes plenty of ironiſh Gold, which may in like manner, be ſeparated of which afterward.

They are very good flints alſo which being burnt retain a whiteneſs, with veins green, skie-coloured, and ſuch like, neither are they diſ-eſteemed which burnt, have black ſpots, and not veins.

But the ſtones (*Quartzen* and *Hornſtein*) although they in burning are not altered, yet if there be ſeen before gold volatile and ſpiritual, they by ſeparation of themſelves yeeld gold.

Groſs and ſubtle ſand having light and yellow gold, yeelds in the burning a skie-coloured ſmoak, and is exalted in color, *viz.* browniſh: but that hath nothing which is not altered.

Subtle earth, yellow or red, paſſing through ſand or a mountain like a vein contains alſo gold, which is for the moſt part volatile, and not mature, flying away in reduction, having ingreſs into ſilver and other metals, and therefore for this reaſon conſervable.

For thy better knowledge thou maiſt prove the ſtones, with white fuſile glaſs, which thing is treated of in the fourth part of the Philoſophical Furnaces, that thou mayſt not have cauſe to impute the fault of thy errour to me; therefore I would have thee underſtand, *viz.* that all ſtones containe not gold, neither in all is it ſeparable by the ſpirit of ſalt: they are therefore to be known before they be applyed to the work.

Now

Now follows the preparation of flints, and the extraction of the gold contained in them, by the ſpirit of ſalt.

FIrſt the flints being made red hot in the fire, they muſt be quencht in cold water, after taken out and cooled, be finely powdered.

N. B. When they are broken in a Mortar the better parts may eaſily be ſeparated from the baſer; for while they are finely powdered, alwayes the beſt part goes into red powder firſt, the worſer part thicker and harder, containing little or nothing, being left: And if they be courſly powdered and ſifted through a fine ſieve the more ſubtle part like red powder goes through the ſieve, the unuſeful part being left in the ſieve like white duſt, which may be caſt away: and if yet ſome redneſs appeares, it muſt again be powdered in a Mortar, and the better part ſhal go into a red powder, the baſer part being left in the ſieve hard and white which is to be caſt away, but you muſt obſerve that not all & every of theſe flints are thus ſeparable by powdering; for ſome being beaten doe every where retain the ſame colour, without any ſeparation of the better parts, which you muſt finely powder and extract in the whole ſubſtance: But they (*viz.* thoſe ſeparable) are more eaſily extracted, becauſe all the gold contained in one pound for the moſt part may be gathered out of 3 or 4 ounces finely powdered and ſeparated in the aforeſaid manner; ſo that it is not need to extract the whole ſtone, nor to ſpend ſo much ſpirit of ſalt. But ſand and clay need not ſuch a preparation, but without a preparation being made before, are extracted by the affuſion of the ſpirit of ſalt.

℞ then of the flints as aforeſaid prepared and ſeparated 2, 3, 4, 6 pound, to which being put into a cucurbit of glaſs whole (undivided) powre of the ſpirit of Salt to the depth of 3 or 4 fingers breadth, and place it in hot ſand or *Balneo*, that there the ſpirit of ſalt may be hot, and may extract the Gold, and ſo let it continue for 5, 6 or more howres ſpace, untill the ſpirit tinged with a deep redneſs, can extract no more. And perchance at the firſt time (though ſeldome) it may not be tinged with ſo great a redneſſe, then muſt you decant that ſame imperfectly tinged ſpirit, and powre to other flints after the manner expreſſed, prepared in another cucurbit, and place it with the flints in a moderate heat for to extract the gold; which done poure it off again, and poure it to freſh flints, and doe ſo often untill it hath drawn to it a ſufficient quantity of gold; which afterward thou muſt keep, untill thou haſt gotten a greater quantity, and all the Gold may bee ſeparated at one time from it, as afterward ſhall be ſaid.

Which done poure to the reſerved flints in the firſt cucurbit, a freſh ſpirit of ſalt, and leave that ſo long in heat, untill it be colored, and extract the gold that is left in the flints, and was not at the firſt time extracted; which ſpirit being afterward decanted, pour it to the flints reſerved in the ſecond & third cucurbit, to extract the reſidue of the gold which was left at the firſt time; and ſo conſequently to the others reſerved, untill the ſpirit be ſufficiently coloured, and can attract no more; which afterward poure off and put it to the firſt, which was reſerved. You muſt alſo poure a freſh ſpirit to the remainder of the extraction for the extracting of all the gold. At length pour to it alſo common water to waſh away the tinged ſpirit of gold remaining in the flints, that none of the Gold may be loſt.

And this labour is ſo long and often to be repeated till there remain neither flints nor ſpirits; in the meane while you ſhould caſt away the flints extracted and waſhed, that the cucurbits may be filled with freſh flints, and ſo continue the work; and if there be no more ſpirit left to continue the extraction, you may then ſeparate the extracted gold from the ſpirit, which is done as followeth: but firſt you muſt have plenty of glaſs veſſels or retorts of the beſt earth, which may retain the ſpirits; which you may ſo far fil with the impregnated ſpirit, that the ſpirit in the abſtraction run not over, which done it is to be extracted in a dry *Balneo* by little and little from the Gold, which ſpirit ye may uſe again in the aforeſaid work. And the Gold which is left in the bottom of the veſſels, is to be ſeparated from the veſſels with a crooked iron wier and (kept being very like to red earth) for its uſe, untill thou haſt gotten a good quantity, *viz.* ſo much as ſufficeth for ſeparation and purgation (of which afterward) to be made by Antimony.

N. B. But when thou ſhalt extract red Talc with ſpirit of ſalt, red or black granates, *Smiris*, or *Lapis Calaminaris*, and other Foſſiles, which beſide fixt Gold contain much immature and volatile Gold; you muſt in the abſtraction caſt in a little iron, *viz.* to the ſolution, which retains & fixes the gold which otherwiſe flyes away in fuſion. Wherefore thoſe ſolutions and extractions of Talc and other things containing volatile gold are better extracted out of iron Cucurbits by earthen alembicks than out of glaſs and earthen retorts, becauſe then that volatile gold doth attract only ſomuch thence as is ſufficient for its fixation; which iron is after eaſily ſeparated by the Antimony from the gold, as ſhall after be taught. And this is to be noted, that not the whole granate is ſoluble in the ſpirit of ſalt, although it be long left in digeſtion, always retaining its former colour; wherefore there is a difference to be made, or a preparation to be learned, requiſite for the ſolution of the gold contained in them.

And you muſt extract Talc not with too much or exceſſive heat, leſt its ſubſtance be totally diſſolved in the ſpirit and be a hinderance to the work; becauſe there is little profit then, for it is therefore appointed, that a little gold diſperſed in a great quantity of Talc may be reduced into a little compaſs that it need not that all the quantity of Talc be made fuſile, becauſe it will thereby procure loſſe. But there is no danger in flints, becauſe the ſpirit of ſalt doth not diſſolve them as it doth Talc, but only extracts gold from thence, the ſtony body being left. The *lapis calaminaris* may alſo otherwiſe be handled in the extraction and fixation than granates, flints and Talc, becauſe it is almoſt wholly ſoluble in the ſpirit of ſalt; which work is not here to be handled, becauſe the extraction and fixation is taught in a peculiar way in another place, neither doe I mean to treat of it here, but only of the extraction of gold out of flints every where to be ſound. And this is the way of extraction of Gold out of flints and ſand in heat by the ſpirit of ſalt, to be done in glaſs veſſels. But there is another way too, which is done in cold without glaſs veſſels which I thought worth the ſetting down, that in the aforeſaid work you may chooſe which you pleaſe, this or that, and it is done as followeth. We muſt have in this way ſtore of earthen funnels well burnt, and not ſucking up the ſpirits; for want of which we muſt have ſuch as be of ſtrong glaſs: there muſt alſo be a form with many holes in it to receive the aforeſaid ſunnels, under which muſt be placed glaſs diſhes or baſons to receive the ſtrained ſpirit.

Here follows the work to be performed by Funnels.

FUnnels being put in the holes of the form, you muſt firſt put a big peice of flint in the ſtraighter part of the funnel, to which after put leſſer peices, and on theſe again leſs, *viz.* as much as ſerveth to fill the ſtraight part of the Funnel, of which the larger part is after to be filled with powdred flints, but ſo that there be left a depth of three or four fingers bredth for the ſpirit of ſalt. By this means thoſe greater peices in the lower part will hinder the paſſage of the fine powder in the affuſion of the ſpirit of ſalt.

Which being done as it ought pour to the flints contained in the funnels the ſpirit of ſalt, to two or three fingers breadth in deepneſs which forthwith ſhall work on the flints and attract their gold, and then run into the diſh or baſon ſet underneath: and becauſe for the moſt part at the firſt time ſome of the powder paſſeth through with the ſpirit, you muſt ſo often poure the ſame ſpirit on the flints untill there be a ſtoppage and the ſpirit come clear; afterward poure this ſpirit into the ſecond funnel with flints; and then into the third, and ſo conſequently until it be ſtrained through the flints of every ſunnel; or til the ſpirit be ſufficiently colored, which you muſt keep untill you have gotten a ſufficient quantity to be diſtilled by retort for the ſeparating the ſpirit from the gold. Then that firſt ſpirit being ſtrained through the flints of each funnel according to order and coloured, pour a freſh ſpirit to the flints of al the funnels according to order beginning at the firſt till you come to the laſt. untill that be ſufficiently coloured, which being done poure a freſh ſpirit of ſalt to the flints (according to their order) contained in every funnel. And when you ſee the ſtrained ſpirit not to receive a tincture, it's a ſign that all the gold is extracted; and then poure on no more ſpirit but common water that it may be ſtrained, and the water will attract the ſpirit of ſalt left in the flints that none ſhall be loſt, which acidiſh water ſave by it ſelf to the ſame and the like uſes: which being done, take out the extracted flints and fill the funnels with freſh as before, *viz.* to be extracted; and doe this ſo long as you have flints and ſpirit. But you muſt not poure a ſpirit not ſufficiently tinged into the ſpirits that are well coloured and impregnated with gold, but keep it a part, and poure it ſtill to freſh prepared flints according to order contained in divers funnels, *viz.* untill it bee ſufficiently coloured, and being coloured, ſeparate it by the glaſs retorts with the reſt, extracting it from the gold by abſtraction; and being abſtracted again uſe it to a new worke like the former. And by this means with 100 pound of ſpirit of ſalt may be extracted ſome thouſand pounds of flints prepared and ſeparate the gold contained in them, which otherwiſe by fuſion cannot be done. But the chief point conſiſteth in the extraction (the ſpirit of ſalt being well and rightly firſt adminiſtred) *viz.* that the ſpirit may not be waſted, whereby many ſtones may be abſtracted with a very little ſpirit. But this caution is to be obſerved in this extraction which is done in cold, that it requireth a ſtronger ſpirit of ſalt than that, which is done in heat by the cucurbits, or elſe the buſineſſe goes on ſlower: but with a ſtronger ſpirit by this (the cold) way they are extracted ſooner and eaſier than by that which is done in heat; and neither ſo dangerous, laborious or coſtly: this extraction then, *viz.* the cold, requires a ſtronger ſpirit of ſalt (which is worth noting) than the hot.

And this is that way by which thoſe golden flints, and other golden foſſiles are prepared, and with the ſpirit of ſalt are extracted, and by which it is again ſeparated from them: Now ſhall follow the manner of purification, *viz.* of the Gold left in the Retort.

N. B. The pure gold being extracted out of the flints, not the iron-like, there needs no great buſineſſe of purification, for thou mayſt purifie it by fuſion with borace, or with the flux made with the equall weight of Nitre and Tartar: but if the gold extracted out of the flints be mixt with iron, as for the moſt part it is, then you muſt not fuſe it with flux, becauſe it is not thereby purified or rendred malleable Gold, but ſeparate it by lead by which way it is purged and made malleable. And if ſuch gold have any ſulphureous impurities mixt beſides, it is not to be ſeparated with lead, becauſe it is then partly turned to droſs and other impurities by the Iron with loſſe; wherefore it is to be purged with three parts of Antimony and ſeparated, by which means nothing is loſt; which is the beſt way of ſeparation and purification of Gold; *viz.* the ferreous, without which it cannot otherwiſe be ſeparated without loſſe.

How impure Gold may be ſeparated and purged by Antimony.

THis work is neceſſary to be known if you think to have any benefit by the aforeſaid extraction of flints by the ſpirit of Salt, which without this ſeparation and reduction is of no moment: and what profit I pray is there by the extraction of immature Gold which by the common way cannot be purged, requiring the induſtry of the Artiſt in fuſion, whereby it may be ſeparated from its ſulphureous fæces and fixed? For it is eaſie to conjecture, that ſuch ſpirituall and volatile gold mixed with Iron, by that common flux is not reducible into a body, but rather into droſs: for experience teſtifies that gold diſſolved with the ſpirit of ſalt,& alſo iron, or any other ſulphureous thing, the ſpirit of ſalt being abſtracted cannot be reduced whole by the vulgar flux made of Nitre and Tartar, going into droſs: which if it happen to corporeall, pure and fixt gold, how ſhall it be otherwiſe with that which is incorporeall, unclean and volatile? for the Gold being ironiſh commonly, which is extracted out of ſtones, and iron having great affinity with gold (by reaſon of which being neerly united, it is difficultly ſeparated, ſo that it eaſier goes with iron into droſſe than parted from it) you muſt of neceſſity make a flux not only attracting that impure gold, but alſo purifying and cleanſing it; that which antimony alone doth, which with its combuſtible fuſible Sulphur works upon that terreous Gold, or iron eaſily mixt: But by its Mercury it attracteth the pure corporeall gold, and cleanſeth it, and ſeparates it from all droſs without any loſſe: wherefore there cannot be a better flux, but requiring induſtry, or an ingenious ſeparation of the Antimony from the gold, without waſting the gold; which is done as follows.

And firſt your ferreous gold, that is left in the abſtraction of the ſpirit of ſalt, muſt be finely powdered in iron retors or pots, & mingled with it two or three parts of Antimony powdred, and mixt in a very ſtrong crucible filled and covered, & then fuſed in our fourth furnace, until that flow like water; which ſoon appearing poure them together in a heated Cone, ſmeered within with wax, and when they be cold ſeparate from the droſſe the *Regulus* (having moſt of the gold) with a hammer, and keep it by it ſelfe. Which done you muſt again melt the droſſie Antimony (as yet containing much gold) that was left, in the crucible, and adde to it a little filing of Iron, mixing them with a crooked wier, and that antimoniall combuſtible ſulphur will be mortified by adding iron and will yeeld a *Regulus* containing the reſt of the gold, which as a regard is had to the quantity of iron added, will be more or leſs, and for the moſt part will anſwer weight to the weight of iron; then caſt the maſs (well flowing) into a Cone heated and ſmeered on the inſide with wax, which being cold ſeparate again the *Regulus* from the droſſe with a hammer, which alſo is to be kept by it ſelf; melt the droſſe again as before, and precipitate it with iron, and extract the *Regulus* thence, which keep by its ſelf, for it contains gold and ſilver mixt. For the beſt gold is precipitated the firſt time, but afterward the baſer ſort, and at laſt only ſilver. Wherefore every *Regulus* is to be kept by it ſelf, that the pureſt gold may be a part, and the ſilvered gold by it ſelf.

N. B. And if the antimony by the the addition of iron doe looſe its fuſibility, and therefore can yeeld no *Regulus*, it's required that you at every time when precipitation is made, by adding iron, that you doe alſo caſt in ſome *Miſy*, to make the maſs to melt in the crucible and precipitate the *Regulus*. All the gold and ſilver being reduced into three or four *Regulus*'s you muſt keep the droſſie parts by themſelves that were left, of which we ſhall ſpeak hereafter.

Now follows the way of ſeparating gold ſilver from Antimony.

THe aforeſaid antimoniall *Regulus*'s may many wayes be purged, and firſt by help of bellows on a plain earthen teſt, as the cuſtome is with Goldſmiths when they make gold fuſile by antimony, which labour is tedious and dangerous; which cannot be done often without the loſſe of health, nor in great quantity: wherefore when a better way is known 'tis a folly to doe it ſo. The *Regulus*'s alſo may be purified by lead on a teſte, which work may be done in a great quantity, but it requires aboundance of coals and lead, where the antimony cannot be preſerved: but it may be done with gain, and is to be preferred before the former wayes: Thou maiſt if thou pleaſeſt calcine the aforeſaid *Regulus*'s and then fuſe them; which way gold and ſilver may eaſily be drawne out. Thou maiſt alſo fuſe them in a crucible, and by the addition of ſome ſalts ſeparate the antimony from the gold and ſilver, turning the antimony into droſs, which being ſeparated thoſe are found purified and malleable, which though it be the eaſieſt way, it is yet alſo very dangerous, for the ſalts often, if you doe not warily proceed doe ſpoil much gold and and ſilver, and ſometimes leave gold immalleable, and ſo double the pains.

But he who knows how to doe this by Nitre only, he may with great gain and in a ſhort time purifie a great quantity of the aforeſaid *Regulus*'s with out loſſe of gold, ſilver, or antimony. There are alſo other means for the doing of it which to relate were tedious and indeede impoſſible. Wherefore I will ſet downe, the beſt of all, moſt profitable in the ſeparations of great quantities of *Regulus*'s. Where firſt is required ſome peculiar little Fu: nace with a fire almoſt like to that in our firſt part of Philoſophicall Furnaces, built for the ſubliming of flowers; it wants indeed a grate, but it hath little vents for to make the coals burn that thy antimony ſeparated from the gold may be ſublimated or elevated into ſublimatory veſſels. Which being rightly built and heated, let ſo much of the *Regulus* be caſt in with a ſpoon as the fire can bear, which wil quickly melt and elevated the air being attracted by the vents, without any trouble: which being ſublimed you may caſt in more, if you have more until all the *Regulus* be ſeparated & ſublimated from the gold and ſilver, which are left in the fire pure and malleable; the furnace being cold you may take out the flowers, and keep them (of which afterwards) for uſes, which way you may not only ſeparate a great number of *Regulus*'s from gold and ſilver in a ſmal time, but alſo keep all the antimony which may many ways be uſed in Alchymy and Medicine with great profit. Which ſure is an excellent knowledge, for not only hereby may any one get aboundantly without wronging his neighbour, but alſo help many ſick people, *viz.* by that excellent medicine made of the flowers: which is a ſpeciall gift of God, for which we owe immortal thanks. And this is of all others that I know the beſt way of ſeparation of gold from antimony, which is not only done in great quantity, in a ſhort time, and with ſmall charge, but alſo without loſſe of the antimony.

Here follows the uſe of Antimoniall Flowers.

FIrſt you may take the whiteſt of the Flowers out of the lower hole and keep them for a Univerſall Medicine; but reduce the reſt (being leſſe pure) into *Regulus* by the ſalt of Tartar, for divers uſes; as ſhall bee ſaid afterward; or you may mingle them with an equall weight of common ſulphur, or antimony, which being mixt in a covered crucible, melt them, and they will yeeld an antimony like to a naturall, good to purifie gold: or thou maiſt mingle themwith other metals, or minerals that by this means they may be made beter; or thou maiſt uſe them in Chirurgery, for they of all ſliptick plaiſters make the beſt. In breif the aforeſaid flowers may many wayes be uſed with good gain and ſucceſſe.

The aforeſaid antimoniall droſſe may alſo be reduced into flowers and uſed in the ſame manner; which indeed are endowed with as excellent properties, as they which are made out of *Regulus*'s; becauſe in that fuſion and ſeparation of gold extracted out of flints and talc, the gold only that was fixt and mature was ſeparated from the *Regulus*'s, (the immature and volatile being left in the droſſe) and elevated with the flowers: it follows thence that theſe are better as well in medicine as in the tranſmutation of metals.

Or if thou wilt, adde to the antimony, (as aforeſaid uſed) old iron to reduce it in a furnace, and take the *Regulus*, having gold and ſilver, which may therefore be uſed in other operations of Chymiſtery; where there is need of *Regulus* as we may ſhew hereafter. But the droſs doth yeeld a *Regulus*, *viz.* in a very ſtrong fire, and a furnace with a peculiar ſeparatory by abſtraction, which although it contain not gold, yet it may bee uſed not without gain, as if it be mingled with Tin in fuſion, it procures to it a hardneſſe and ſound, uſefull for faſhioning divers ſort of houſhold-ſtuffe, which is not ſo eaſily darkened as the common Tin, or if thou wilt not, thou maiſt make weights of it.

Hitherto we have treated of the extraction of gold out of flints, and of its purification by antimony; now wee will teach you how to uſe the reſt of the antimony as well in the perfection of baſe metals as in medicine, as well for the preſerving of Health as the curing of Diſeaſes.

But ſeeing wee have made mention of an Univerſall Medicine, to be made out of antimony aforeſaid, I would not have thee think that that is ſuch as can take away all diſtempers

pers, in generall, without diſtinction, which vertue is only aſcribed to the *Philoſophers Stone*, but not by me to this medicine; to which I attribute no more then I have tryed: But this in truth I dare affirm, that there is beſides the ſtone ſcarce any comparable to it; for it doth not onely preſerve the body from divers diſeaſes, but alſo happily frees it from the preſent, ſo that it may deſervedly be tearmed a *Univerſall Medicine.*

The preparation followeth.

℞ of the flowers purified from the droſſe a pound, *viz.* of Antimony, by which the extracted gold was purified, which for the moſt part are of a yellow colour having gold volatile and immature: in defect of which take the flowers made out of the golden *Regulus*'s being for the moſt part white, to which powre in a glaſſe Phiall ſtrong and long necked, of ſpirit of wine tartariſed three or four pound, mingle and ſtir them wel together, and put on it another crooked pipe (within which let there be ſome ounces of quickſilver as is deſcribed in the fifth Part of our Philoſophicall Furnaces) and make ſtrong the joints with a bullocks bladder thrice folded, made wet, which dryed, place the glaſs in *Balneum*, and give fire by degrees that the ſpirit of wine with antimony may digeſt, in which leave it for 24 houres ſpace, and ſo ſoon as the fire is out, take out the glaſſe, when it is cold, pour off the ſpirit tinged red from the flowers, and poure on freſh; and place it as before in *Balneum* to digeſt 24 houres ſpace, till it be red, and doe this the third time, or ſo often till the ſpirit be no more coloured, for then no more is to be poured on, and that which is coloured is to be filtred with Cap-paper. The reſt of the flowers after the extraction, as not requiſite to this buſineſſe, are to be either kept by themſelves or thrown away. But the tinged ſpirit is to be abſtracted out of a glaſſe cucurbit by an alembick to the half, from the tincture, which diſtilled ſpirit may again be uſed in the ſame work: but the tincture left in the cucurbit is the medicine, of which mention has beene made.

Now mention being made alſo of tartariſed ſpirit of wine, that I may ſatisfie the doubtfull concerning that I will here alſo give its deſcription which is as followeth.

℞ of tartar 20 or 30 pound, put it in a large coated retort, and place it in ſand, and diſtill the ſpirit off with a ſoft heat.

N. B. This work may better and ſooner be performed by that inſtrument of our ſecond Furnace, and becauſe it requires great and large receivers as being very penetrative, thou maiſt firſt apply a tin or copper ſerpent to the neck of the retort inſtead of a receiver, which is placed in a tub filled with cold water, that the ſpirits being thereby cooled may be retained which afterward you muſt abſtract to the halfe out of a glaſſe cucurbit by an alembick: for the other half with black oil is unprofitable in this work, and therefore to be taken away. After that mingle the more ſubtile part diſtilled with half of the *Caput Mortuum* of the aforeſaid ſpirit calcined to a whiteneſs, and abſtract it half again in a gentle *Balneum* out of a glaſſe cucurbit by an alembick, the joints whereof are every where to be well cloſed, and the calcined Tartar ſhall receive with it ſelfe the ſtench together with the phlegm, only the purer part of the ſpirit and more ſubtle diſtilling forth, which is again to be mingled with the other halfe of the Tartar calcined to a whiteneſſe, and to be rectified by another alembick; the *Caput Mortuum* may again be calcined to take away the fetidneſſe, that it may be uſed again. And this is that tartariſed ſpirit of wine, with which the aforeſaid tincture and eſſence is extracted, and truly not only this, but of all other metals, which no other can doe. And if it were lawfull, I would write ſomething more of its wonderfull force and vertue, which it hath in purifying baſer metals, with which it hath a great affinity; for it can ſeparate the pure from the impure, of which more in another place. But when it is to bee uſed in mending of metals, it needs not ſo much rectification, as is required in the extraction of metallick medicines; where you may draw it in plenty out of the dry lees of wine. But there is alſo another tartariſed ſpirit of wine, which may alſo be uſed in this ſame work, which is made after the following way, Diſſolve in a pound of the ſpirit of wine ſix ounces of cryſtall of Tartar; which ſolution uſe in the aforeſaid extraction in the ſame manner.

An Admonition.

I Deſire thee not to be offended at the plainneſſe of the preparation, *viz.* of this medicine, made out of a very meane thing, and without much acuteneſſe of underſtanding, ſay not to thy ſelf, if this be true, that ſuch a famous and excellent medicine can be gotten by ſuch eaſie meanes, what neede we ſo many various decoctions both pretious and nauſeous bee prepared; why is not this ſubſtituted in their places? Certainly this ſhould rather be uſed. But who is ſo audacious as to dare to diſpleaſe the multitude defending thoſe kinds of decoction? Surely none; and there are few who are able to turn from their old cuſtom. An ancient cuſtom therefore whatſoever need it hath of being amended, yet prevails. Would to God the time would come when Phyſitians would practiſe not out of avarice, but out of charity which we owe to our neighbour, which is deſired by, and full of comfort to the ſick.

But for the vertue of ſo great a medicine, I ſhall open to thoſe that are younger and leſſe skilful than my ſelf, not it to thoſe who in yeers and learning doe goe before me, but let every man enjoy his own judgement.

Of the vertues of this Medicine.

THis antimoniall tincture doth above all other medicines evacuate vitious humours, & inſenſibly purgeth impure bloud; opens any obſtructions of the liver, Spleen, Reins, and the other veſſels, attracting to it all malignities, and leaving no impurities behinde it. And becauſe it cleanſeth the bloud it cures the Leproſie, French pox, and itch, and other diſeaſes proceeding from the impurity of the bloud. By its penetrative and attenuative vertue, it reſolves all tartareous humours and evacuateth them, *viz.* which ingender the gout, the Stone of the Bladder and Reins; but not the Stone perfectly coagulated, onely it mitigateth its pain, and hinders its increaſe; but being not hardened or coagulated it attracteth and evacuateth it totally and fundamentally out of all parts, it takes away alſo all Feavers and other diſeaſes comming from the ſuperfluity of humours. It gently evacuateth the water between the skin, by ſiege and urine. In brief it ſtrengthens and purges the principall parts, and preſerves them from all preternaturall accidents. It is a moſt excellent preſervative in the time of Peſtilence, and other contagious diſeaſes; and of them being caught it is a moſt abſolute remedy, expelling the diſeaſe ſuddenly from the heart and evacuating it. In few words; 'tis of all others a moſt excellent Univerſall Medicine, very profitable to both old and young, and alſo very ſafe; but warily to be miniſtred by reaſon of its ſtrength with which it is endued, which is moſt powerfull, for it is as a great fire which extinguiſheth the leſſer. Truly a better Medicine cannot be deſired than this which is extracted of a very mean thing, in a ſhort ſpace of time, and with very ſmall coſt and pains. I ingenuouſly confeſſe I never ſaw its like, which I doubt not to be the beſt in the world. Wherefore then do we ſeek any other but this, *viz.* which excels in thoſe things which are deſired from the reall medicine? But as it is moſt excellent, yet I am certain, that many deluded people will bee offended at it, being prepared out of Antimony, a mean and deſpiſed thing, and after a plain way. But 'tis no matter, *For the world will be deceived*, looking after gay things, diſreſpecting and deſpiſing mean things; when all good things, yea even when God himſelf doth rejoice in ſimplicity, for which by wicked and proud men he is not ſought unto. But this is the effect of ſinne by which man is ſo blinded, that though he know not good, when ſet before his eyes, yet he is ſtudious of evill.

Of the uſe and doſe of this Medicine.

SEEing of all Medicines it is the moſt powerfull; it had need be warily uſed, for a ſmaller doſe is alwayes ſafer then a greater; which therefore may after be given; that which is to be obſerved in all diſeaſes of young and old. To children of 2, 3, 4, or 6 months old, againſt the Worms, Scabs, Feavers and Epilepſie, you need not give above half a drop with a proper vehicle, which you may repeat three or four times a day: it killeth the Wormes, it emptyeth the ſtomach of evill humours; it refreſheth them, and preſerves them from ſcabbineſſe; and becauſe it evacuateth evill and corrupt humours, it preſerveth them from the ſmall pox and meaſels, *viz.* if it be uſed every month, but to children of 1, 2, or 3 yeeres old you may give a drop, and to children of 4 or 5 yeeres old a drop and a half: to young people between 15 and 24 years may be given 2, 3, or 4 drops. To ſtronger bodies from 25 to 50 yeares 4, 5, 6, or 7 drops. But the doſe muſt be greater or leſſe with a regard had to the ſickneſſe of the patient. And in the Stone and Gout may be dayly administred in ſome drops of wine or beer, *viz.* in the morning faſting, unleſſe the patient be very weak; for then you may give it twice or thrice in a day, and continue this till the cure be perfected; where is to be obſerved that he muſt keep a temperate dyet.

In the Leproſie, French-pox, and Scurvy, every morning may a doſe be given and the diſeaſe ſhall totally bee rooted out. Otherwiſe, *viz.* the ſtrength being too much waſted and weakened, you may give only every other day, *viz.* ſo long as ſhall be need.

In the Epilepſie it may be given dayly; and alſo in the Dropſie. In all Feavers two or three houres before the fit. In the Plague it is to be given preſently, and every day to be repeated: but for a preſervative to be drunk every week once. In all other internall affects it muſt be given dayly, untill the declining of the diſeaſe; but afterward by little and little the medicine is to be uſed till the diſeaſe be fully cured.

In externall, as in freſh wounds by a blow, thruſt, or ſhot; broken bones, &c. every day once; with a neceſſary extrinſecall application of a plaiſter. In old Fiſtula's and Cancers, it may be uſed once every day intrinſecally, and extrinſecally, the place affected may be cleanſed with Minerall ointments, For by this meanes every inveterate evill how deſperate ſoever, is throughly cured, and pleaſantly without all pain.

But although this be moſt pretious of all Medicines, yet there is a *menſtruum*, not corroſive, with which not only more eaſily than with the ſpirit of wine tartariſed, a Univerſall Medicine may be extracted out of Antimony and endued with better then the aforeſaid vertues ſo that for the charge of one royall, in three dayes time, ſo much may be gotten as may ſerve to cure ſome thouſands of men, but alſo all vegetables, animals, and minerals and metals are radically diſſolved and reduced into their firſt matter: by which means not onely very great poiſons are changed into moſt wholeſome medicines; but alſo bitter things are deprived of their bitterneſſe: for by it things are ſo corrected, that they doe no more provoke ſtool and vomit, *viz.* which are very vehement Catharticks (by Nature) being changed into moſt excellent reſtoratives. Alſo fetid things being corrected by it doe acquire a ſweet odour. And it doth not only (which ſeems a wonder) diſſolve vegetables, animalls, and minerals with thoſe things which come of them, but alſo the very Glaſſes; wherfore you muſt alwayes chuſe the ſtrongeſt glaſſes for digeſtion and ſolution, or in the defect of ſuch the weaker are to be changed every 6 houres. And yet it is not at all altered by thoſe things that it doth reduce and turn into their firſt matter medicinall, neither in vertue nor colour; for it alwayes keeps the middle place between pure and impure, of which this falls to the bottome, but that ſwims on the top of the *menſtruum*, which may again be uſed. In briefe its vertues in preparing medicines cannot bee enough praiſed. But it may bee compared with the Mercuriall water of *Baſilius Valentinus*; and the *Alcaheſt* of *Paracelſus* and *Helmont*, which I judge to be the *Fire* of the *Maccabees* turned into a thick water underground. It is a perpetuall fire but not alwayes burning viſibly; it is a water permament not wetting the hands, the Sope of the Wiſe, the Philoſophers *Azoth*, and the Royall-bath.

Which Menſtrue though I have known ſome yeares, and have often uſed it with metallicks, and by it have found out many ſecrets, yet I never thought of its uſe in Phyſick, untill being askt of one who was a great ſtudent of *Helmont*, whether I knew the preparation of the liquor *Alcahaſt* of P*aracelſus*; and naming ſome of the vertues of this liquor in preparing Medicines; I began to be think my ſelfe, and I obſerved that it was my *ſecret Balneum* that purifies minerals. Wherefore I preſently made tryal with vegetables & animals (for I knew the vertues thereof in metallicks) and I found wonderfull and aſtoniſhing things in it which before were incredible to me. I affirm and confeſſe therefore ſincerely, that all and every the invented medicines publiſhed by others and my ſelf how rare and coſtly ſoever, are moſt mean things in my eſtimation. For this *Univerſall Key* was wanting to us. For our vegetables and minerals hower by art macerated cannot bee perfectly reſolved, and therefore we hitherto have had but part of their vertues. But now we need not much art, labour and coſt to reduce a whole body without corroſives, into the firſt matter, like in ſhape to ſome clear and excellent water, of its own accord caſting forth its ſuperfluous terreſtreity, and becomming a moſt wholeſome medicine, conſiſting of the three pureſt principles; that which cannot be done without this *menſtruum*. For what elſe could Phyſitians extract out of hearbs than ſyrups, Electuaries, Conſerves and Waters? with which preparations they were not amended but only qualified with the addition of Sugar or Honey; becauſe there is no ſeparation made of the pure from the impure or good from bad. For all are left mixt together in the Electuaries and Conſerves, but in the ſyrups and waters diſtilled there is only ſome part. Extracts indeed by the ſpirit of wine are not to be diſeſteemed if rightly prepared, but they are no better than their ſimples; and beſides want that which the ſpirit of wine cannot draw out, which remainder though being calcined for the drawing out the ſalt, which is mingled with the extract yet that is not of much moment, for fire deſtroyeth the vertue of hearbs, ſo that fixed ſalts, as cryſtalliſed, do perform nothing in medicine, thoſe excepted which without combuſtion are made out of the juice of hearbs, of which in the third part of our furnaces Philoſophical. But none dares extract the moſt ſtrange or efficacious ſort of hearbs for medicine, becauſe they in preparation are not corrected or amended.

But by this means the moſt ſtrong hearbs, which without this preparation are poiſons, are matured and purified by the liquor *Alcaheſt*, ſo that they may ſafely be taken againſt moſt grievous diſeaſes. For God did not create theſe hearbs in vain, as ſome think, which he purpoſely created that his wonderful works might appear, and that it is poſſible to take away the curſe from them by a man, being freed from the malediction by the regeneration through Chriſt. See *Opium*, Mandrake, Henbane, Hemlock and other ſtupifying things, how deadly they are being cautiouſly uſed? which corrected by this Menſtrue become moſt ſafe and excellent medicines. How dangerous is ſpurge, ſcamony, hellebor, gambugium and other ſtrong purgers (being adminiſtred unwarily) no man is ignorant: all which are by this way corrected, and changed into moſt wholeſome medicaments. Who I pray dares eat wolfesbane, and poiſonous toad-ſtooles and other venemous vegetables? which are all ſo corrected by the liquor *Alkaheſt* as that not only they are not poiſonous, but are alſo turned into moſt ſafe and wholſome medicines of many diſeaſes, *Nux vomica, Levant* berries, and other things that diſturbe the braine are by this means made wholſome, alſo poiſonous Animals, as Spiders, Toads, ſerpents, vipers, *&c.* are by it corrected, as that not only they are not poiſonous but do reſiſt and expel poiſon.

N. B. Conſider the ſpiders ſigned with the croſs, who change their skin every month and renew themſelves, which the ſerpents and halcyon do but once in a yeer. How great may the vertue of worms earthy and crude,*&c.* in reſolving tartareous humors and the French diſeaſe is, many know, what then will they do being corrected with this Menſtrue? The *Cantharides* and *Millipedes* are alſo ſo corrected that they may more ſafely be uſed in provoking urine. And if that moſt venomous Baſilisk, of which there are ſo man fables, whoſe ſight only kils men (which according to the letter is falſe) could be had, he might be changed into medicine by the liquor *Alkaheſt*; as that mineral Baſilisk, Gun-powder may be, which in a moment kils innumerable men; alſo Arſenick, Orpiment, Kobolt and the like; ſo that they be deprived of their malignity and be reduced into very excellent medicines. In brief, its excellent vertues which it manifeſts in correcting of venemous ſimples cannot be ſufficiently deſcribed. Wherefore its worth our paines to ſearch it with all our power, that we may prepare admirable medicines, that the ſick may not for the future be ſo vexed with thoſe tedious and bitter cups. Truly I cannot enough admire its great vertues which have been hid ſo long. It is not a corroſive thing and yet diſſolves every thing, but ſome things ſooner then others. It changeth and amendeth their natural vertues; wherefore it may be the comfort of Spagiriſts, having a long time ſought for rare medicines, *viz.* being that by which vegetables are ſeparated and corrected, and alſo animals and minerals. Wherefore al conſcientious Phyſitians may have commended to them the preparation of this univerſal menſtrue by the help whereof to prepare their medicines; of which the orginal and preparation is vile, but its vertues moſt efficacious, the finding out and uſes abſtruſe. Wherefore it is not obtained, but from *God from whom proceeds every good gift*. Do not think then that gluttonie and drunkenneſs, idleneſs, pride and lying, the contempt of thy neighbour, malice, avarice with an impious life, to be the means by which it is to be obtained, for it is only the *gift of the merciful God*, *viz.* this menſtrue, the gate and key of which is only divine mercy. But that thou maiſt know what is to be determined concerning medicines prepared out of poiſonous ſimples, I will in brief expound that by example;

ple: for all vegetables, animals, and minerals, called poiſons, making war with humane nature being intrinſecally uſed, and therefore not undeſervedly ſhunnd of al, are like ſome powerful unvanquiſhable enemy, with all his power ſeeking the oppreſſion and deſtruction of his contrary, who being checked by a mediator of no leſs ſtrength, & reconciled with his contrary, does no more (being unable before the reconciliation to reſiſt his powerful enemies) fear the contrariety of his enemie, which now is made his friend bringing aid for the exſtirpating and vanquiſhing of all ſuch like (otherwiſe) invincible enemies. Even ſo is it with venemous vegetables, animals and minerals, deſtructive to humane nature: which by the liquor Alkaheſt (a checker and reconciler) are ſo corrected and reduced, that they hurt not, being deprived of their malignity and made friends with men: whereby they are not longer poiſonous enemies but very ſafe and wholeſome remedies, agreeing to humane nature overcoming and expelling other the like enemies otherwiſe poiſonous, and invincible, for by how much the more enemie before reconciliation it was, by ſo much the more help is brought by it, the reconciliation being made. There is not the like found in nature; which can ſo ſuddenly correct poiſons, and reduce them into their firſt matter and bring them into very wholeſome eſſences. Let religious Phyſitians then that can, get this. And ſo I end this declaration (not without cauſe ſet down) which will move thoſe hearts which are not as yet hardened. This certainly is a true Philoſophical correction, with which that which is maligne is turned into a wholeſome ſubſtance. What profits that correction, I pray, which is made by the admixtion of other things, as in the mixture of Catharticks and cordials? Truely nothing, neither can the cordials do any thing but debilitate the Catharticks; for nature is not at once able to expel a purging poiſon, and attract a thing confortative and corroborative: For a purge being given, forthwith that ſhews its ſtrength in the body, whoſe malignity nature reſiſting deſireth to expel it; before that it can attract the confortative; wherefore that friend is expelled together with the diſeaſe. The ſame happens in the mixture of ſugar, honey, and other ſweet things with bitter, ſharpe, and tart,&c. whoſe unpleaſantneſs is not corrected by ſweet things, but only dulled, thereby acquiring another ſmel and taſt, without any other eſſential alteration. Which correction is like to that, which is made in Taverns amending the aire with ſweet fumes, which before was infected with the ſpittings, ſpuings, and ſtinks of ruſtick drunkards, which is to ruſticks, an excellent corrrection, attracting the ill as well as the good aromatick odour being by drunkenneſs deprived of their judgement, but not ſo to ſober men enjoying the uſe of underſtanding, to whom that ſeems a ruſtick correction. In this manner (not to be commended) are at this day ſimples corrected. But a true and Philoſophical correction is done by it ſelf without the addition of other things, by benefit of the fire only as well actual as potentially moiſt, by ripening, mending and ſeparating the malignity; which is done by the liquor Alkaheſt, as it is called by *Paracelſus* and *Helmont*.

But whether this my liquor be the ſame Alkaheſt of *Paracelſus* and *Helmont*, it matters not if it performe the ſame things.

Fire and a fiery vertue may do much, but not by burning and deſtroying, but by maturation and nutrition; and feeding and moiſtening. Of which moiſt fire ſee *Artephiuus*, *Bernhardus*, *Baſilius*, *Paracelſus*, &c. for maturation is not done with cold things but hot, promoting germination. Aud what ever nature hath left imperfect in the vegetable kingdome, mineral and animal, *viz.* accidentally; that may be amended by art with the liquor Alkaheſt, which is the beſt way of correction, untill by benefit of art and the help of nature ſome better thing be found out, &c.

And theſe are the vertues of that wonderful liquor Alkaheſt which is made uſe of in the preparation of medicines: And becauſe it is ſaid before that it ſhews its vertues on metallicks alſo, I could not conceale them from the ſtudious. But all its vertues ſhall not here be related, for it is indued with ſo many that no mortal is able to number them. As for me, although by divine favor, and the inſtruction of the excellent man *Paracelſus* (excellently in a certain place, but obſerved in few words; deſcribing it, ſpeaking of it briefly, but very plainly and cleerly naming it) I did obtaine the knowledge thereof which afterward daily I did more and more encreaſe, ſo that I could hardly believe that any ever had ſpent ſo much money and pains in the ſearching of its vertues, for the trying of metals: yet I muſt needs confeſs although happily I have made more tryal therein than any other; that many of its vertues are as yet unknown to me. Seeing then that its vertues and ſtrength cannot all be tryed by any man by reaſon of his ſhort life, although ſearching a hundred yeers; and that by our merciful father only to a few, and but part of the knowledge of its wonderful and incredible force, is granted, to the glory of his divine name, in favor of the poor ſick, which none how learned ſoever, with his ambitious learning and craft could ever obtaine. Therefore ſome excellent gifts being given from the father of lights the omnipotent God, to ſome of his children, gratis and out of meer mercy, *viz.* for ſome cauſes, I eaſily believe, that it is not his will that it ſhall long be kept cloſe, but be revealed to the world to the glory of his name, and the benefit of our poor neighbour. Wherefore I could not longer hold my peace, hiding my talent which I received gratis though ſmal, but communicate it gratis to my neighbor; but ſo that the divine myſtery may not be gotten by thoſe ungodly abuſers, but only by the worthy through divine favor. I affirm therefore expreſly that in whole nature ſuch a thing may not be found, for not only by its help all animals, vegetables, and minerals may be reduced into very excellent and ſafe medicines; but alſo be brought into the firſt matter, minerals and metals may be purified, waſhed and fixed, and ſo changed into better bodies. That which is worthy admiration, that in ſo vile and mean a ſubject ſhould ly hid ſo great vertues, by which alone without any other art, may be acquired riches and honours, and loſt health. Then which thing what doth mortal man more need in his miſery, beſides the divine word, the comfort of the ſoul, the for neceſſary ſuſtentation of life, ſoundneſs of body and honeſt report before God and men? All theſe things may be had with this ſubject, ſo that one need not to involve himſelf into any other troubleſome art or vanity of this world, having this ſecret, whereby all neceſſaries may in abundance be proccured: of which gift that this unclean world is unworthy, I do affirme ſincerely, becauſe it ſwels with ambition & avarice; for which we are not able to give God the donor ſufficient thanks in our whole life, wherefore I would have all what ſtate or order ſoever earneſtly admoniſhed, that they do not uſe this gift from heaven to the deſtruction of their ſouls, but in thankfulneſs to him that gave it, and every way to the good of their Chriſtian neighbour.

Now follow the vertues which it maniſeſteth in metallicks.

First it, *viz.* the Philoſophical menſtrue, doth radically diſſolve all minerals and metals without noiſe, and reduces them into very ſafe and wholeſome medicines. Out of gold it makes potable gold; out of ſilver potable ſilver, and ſo conſequently of other metals potable metals; ſo that it may well be called the *univerſal Mercurie.*

Secondly this ſecret menſtrue purgeth, waſheth and tranſmuteth minerals, and metals to a more noble ſpecies, wherefore it may well be called *Sapo Sapientum*, by which the ſaying of the Philoſophers is confirmed: *Ignis & Azoth abluunt Latonem.*

Thirdly, by it all minerals and metals are matured and fixed, ſo as that afterward immature gold or ſilver incorporated with it, may by cupellation be drawn out with gain; wherefore tis deſervedly compared to *Hermes ſeale.*

Fourthly, it makes metals volatile and radically conjoynes them that they abide together, and one act on the other in the fire; it diſtroyes and revivs, kils and renews, wherefore it is compared to the Phenix.

Fiftly, it ſeparates metals without any loſs and that ſpeedily: but after another manner then corroſives, ſo that each of them may be had by themſelves. For example, being about to ſeparate gold,ſilver, copper,iron,tin,lead mixt;one or two three or four of them mixt that they may appear each by themſelves, without the loſs of any, you need not cupellate the mixture with tin, which way only gold and ſilver are gotten out with the loſſe of all the reſt: but by this way they are all preſerved, where by turns one after another they are extracted wonderfully and ſwiftly, in half an hours time by this ſharpe *vinegar of the Philoſophers*,&c.

Sixtly, By it metals may ſuddenly be mortified and reduced into tranſparent glaſs, irreducible and like *Amauſa*, but reſerving the propriety and nature of every metal: which in the reduction of gold,do give perfect ſilver: whereby is confirmed that ſaying of the Philoſophers; *the corruption of one thing is the generation of another*, and that of *Paracelſus: Ex aliquo fiat nihilum, & ex nihilo aliquid.* But this incombuſtible water or permanent water ſhews the truth of the Philoſophers writings generally mentioning it;in it the ſolution,putrefaction,diſtillation, ſublimation,circulation,aſcenſion,deſcenſion,cohobation, receration, calcination, coagulation, fixation and fermentation,*&c.* in their work to be done at one time and one way: in which onely operation all the colours appear of which the Philoſopherrs make mention; As the head of the crow, virgines milk, dragons blood, peacocks tayles, green and red lyon,*&c.* There is alſo by it demonſtrated the truth (by the liquor Alkaheſt) of that Hermetical ſaying, *That which is above, is as that which is beneath*, &c. and many other things are performed by its help, as making that ſecret Sandivogian *Chalybs*; alſo that long ſought for oyle of Talc.

So far (Courteous Reader) hath come my experience; neither doubt I but by it to obtaine that univerſal *Salamander* which lives in the fire.

Theſe things which I write are true and no fallacies. And though this ſecret be incredible to the ignorant for the wonderful vertues it ſheweth in the preparation of medicines, I would willingly publiſh it to the world for publike good, but on conſideration I held it not meet to communicate it for certain cauſes. But only leſt the knowledge of it ſhould periſh, and that the true (and almoſt extinct) medicine for the curing of diſeaſes vulgarly incurable might flouriſh, I have revealed this ſecret menſtruum to two friends, *viz.* its preparation and uſe.

But do thou not think becauſe I write of theſe high things, that I do intend to make common the ſecret to all in general; not ſo, but I endeavor to confirm him that ſeeketh, and give him occaſion to ſearch this ſecret deeper; which being found he ſhall not only finde the truth of my words, but he ſhall daily by exerciſe obtaine far greater things then theſe.

And becauſe I have never aſpired after vaine riches and honors, nor never deſire them; I might well be perſwaded, to leave to others as yet not hating the wicked world, my troubleſome labors; becauſe in this my painful age ſuch tedious labors are very burdenſome, beſides Philoſophy hath pointed me another way, ſo that what I am able I have determined to abſtaine from theſe vanities, and to ſeek a perpetual good, the life of reſt, but my counſel ſhall not be wanting to thoſe that ſeek it: for beſides moved with the former reaſons, alſo ſeeing innumerable many vaine Philoſophers, as well learned as unlearned, unceſſantly working, and loſing rheir time and labour, and at laſt deſpairing, are perſwaded that there is no truth in the Philoſophers writings but to be all filled with lyes and decits; whence royal Chymiſtry is diſgraced.

But ſeeing and marking the infallible truth of ancient writings, ſuffering injury by unskilful Zoilus's; I could not but defend their worth and vindicate them from injuries, *viz.* in a few words demonſtrating the poſſibility of metallical tranſmutation. But I do not affirme that by the art which I have many yeers exerciſed and the poſſibility of which I defend I have gotten much wealth; becauſe hitherto I could not make trial but in ſmal quantity for finding out the poſſibility without any gaine, and only particularly; for I have never tried any thing in the univerſal work, reſerving it to a more convenient time and place. But I will not deny ſuch a univerſal medicine: becauſe I have ſeen the principles of it, and foundations of the art, wherefore houſhold cares being removed, I intend to make tryal of it. For who will longer doubt of the poſſibility of it being proved by moſt excellent men, yea Kings and Princes? which godly and honeſt men have not written for gaine; ſome of whom though they lived with Ethnicks, yet were they not Heathens, who had more knowledge of Chriſt by the light of nature then thoſe fooliſh detractors of Chriſtian truth, as they appear to be by their writings. But thou wilt urge that if thoſe things were true which they write, then it might be found in them: but it is not, becauſe all and every one miſs of it in their practice, ſo that their time, labor and charges are ſpent in vaine. I anſwer, Their writings are not to be underſtood according to the letter, but according to the hidden ſenſe, according to which they have written the naked truth which to the illuminated is conſpicuous.

And this *menſtruum* ſufficeth to defend the writings of the Philoſophers without the metallick tranſmutations; ſo that I verily believe the time to be neer, when the omnipotent God before he judge the world in fire, will ſhew his omnipotency to the nations by the revelation of the wonderful and incredible things of nature; of which, tranſmutation of metals is not the leaſt, which in the third part of this mineral work I ſhall deliver to the laſt age (being acceptable to God) to the profit of my neighbor, and for demonſtration ſake. Wherefore I now paſs over ſuch things, with a firme hope, that this faithful admonition ſhall be received as an undoubted and infallible truth.

How the aforeſaid Regulus, *of the flowerss and droſs of Antimony, is to be uſed in the bettering of courſe metals, ſhall be ſhewen, that art may not be abuſed.*

THe Antimonial *Regulus* a radical metallick humor, may help to perform wonderful things, for being reduced to a water without a corroſive, it reſolveth all metals, cleanſeth, waſheth and purifieth them, and turns them into a better ſpecies, ſo that particularly not a ſmal gaine may be from thence received. But how it may be redueed into water, and how by its help metals may be reſolved, volatized and again fixed, hath been demonſtrated by *Artephius*, *Baſilius* and *Paracelſus*; wherefore we need not here repeat their writings, but refer the readers to their works.

But not only the *Regulus*, but alſo all Antimony may many wayes be uſed in the ſeparation of metals, *viz.* For the extraction of hidden gold, which cannot be done without Antimony; as ſhall appear by the following example. When you finde a marcaſit or other ironiſh foſſile, that will not yeeld to the tryal by lead, add to it three parts of Antimony, and being well mixt, melt them in a covered crucible, and being melted powre it into a cone; and when all is cold, ſeparate the *Regulus*, which purge againe by fire as before, and thou ſhalt finde gold contained in the aforeſaid foſſile: And if it be indued with more plenty of gold, for it is not all drawn out at one time, *viz.* with the firſt *Regulus*, another *Regulus* is to be melted by adding more iron and ſalt-peter which is alſo of a nature near to *Sol.* And if theſe marcaſit foſſiles are not ferreous, you muſt in the firſt fuſion, adde iron and nitre to them, or elſe they yeeld no *Regulus*. By the adding more ſcals, of iron more *Regulus* is made, and for the ſame uſe as that is of which above in the fuſion and ſeparation of extracted gold; weights alſo may be made out of the droſs. And thus are *lapis calaminaris*, marcaſit, kobolt, zinck, talc, and other foſſiles ſeparated, *viz.* containing gold.

But all gold containing iron (as that of Stiria, Carinthia, the Granacia and of Tranſylvania, &c.) may this way be eaſily ſeparated with profit by the help of iron. And if the iron have no gold, yet if the Antimony have it, it may thence be ſeparated by fuſion with iron, *viz.* if it be brought to a *Regulus*. The reſt of the Antimony may again be fuſed with new iron and new glaſs of more weight then it, but leſs then this, and be reduced into a *Regulus* fit for the following uſes. Out of the droſs let weights (that nothing may be loſt) be made, that thou maiſt have the more gaine as may appear from the following example.

When you have the Antimony , a hundred of which contains two duckats, if you will ſeparate the gold ; take a hundred [weight] divided into three or four parts, fuſe it according to art adding a little iron and ſalt of aſhes and reduce them into ſmal *Regulus* weighing a pound or two. Then uſe the droſs with half the weights of the iron in a large & ſtrong crucible, and thou ſhalt have more *Regulus's* about fifty pound or more, droſs 40. *lib.* which make weights of, or elſe guns, *&c.* the reſt, about eight or nine pounds will vaniſh into ſmoake. And ſo thou haſt reduced the gold contained in a hundred weight into one or two pounds, which thou maiſt ſublime by fire into flowers (leaving the gold in the fire) for its uſes,but thoſe 50 or 60.pounds of the *Regulus's* prepared by adding much iron, they having little or no gold, you may mingle with tin for its beauty,hardneſs and ſounding,to make diverſe ſorts of houſhold-ſtuffe, as platters,diſhes,*&c.* For tin mixt with the *Regulus* looks like ſilver for whiteneſs and hardneſs, and ſounds like it, nor is it ſo eaſily dulled,as unmixt.

Now let us weigh what gaine may come from the ſeparation of the meaneſt Antimony. Put caſe that a hundred weight of Antimony be ſold for three Royals(for ſo for the moſt part the Polonian is ſold , than which although that of Hungaria and Tranſilvania be deerer, yet this hath more gold) to which adde 60. pound of iron, which is ſold for half a royal,and the charge of coals and crucibles requiſite be half a royal more : the total of the expences is four royals, for which take two duckats in gold,ſixty pound of *Regulus*,eighty pound of droſs, and one or two pound of flowers Thoſe 60. *lib.* of *Regulus* may be ſold at the price of tin, whereof a pound is ſold for a quarter of a royal, and then their whole price is fifteen royals. Then the eighty pound of refuſe made into weights may be ſold at fourty ſhillings,or at leaſt twenty four ſhillings,or half a royal; And all things being conſidered and abhracted as they ought there may remaine the value of ten royals.

And though the Antimony ſhould yeeld but one duckat;and a pound of *Regulus* ſhould be ſold at the eighth part of a royal, yet the remainder would be above ſix royals : And in a day there may eaſily be two hundred weight ſeparated by two men, And then ſuppoſe it ſhould containe no gold (as ſome Antimony doth not) yet may four or five royals be gotten daily.

But when you have Antimony one hundred a ℔. whereof containes three four or five duckats, and iron requiſite to the ſeparation containing one or two duckats, then there is ſo much more gained. Then let him that undertakes this buſineſs ſeek for the beſt copper and iron, and he may well gaine in a day twenty, thirty, and ſometimes ſixty royals.

N. B. And if you ſhould have ſo much *Regulus* that you could not mix all of it with tin, for want thereof, then it may be ſold in parcels, ſo that one ℔ may go at a fourth part of a royal; by which means the daily gaine may not be diminiſhed, but may be rather encreaſed as may be ſeen by what follows. The *Regulus* of copper is the maſculine ſpecies of lead; whoſe firſt being is gold impure and mature: but the firſt being of common lead impure and immature is ſilver as experience witneſſes, for copper purged and fixt yeelds gold, but the common lead only ſilver. And becauſe Antimony which is better than common lead is called the *Philoſophers lead*, or their *ſecret lead*; of many ſo named but known of few; not that the thing is unknown or of an unknown original, but by reaſon of its hidden properties; therefore I ſay that its vertues are not all to be known by any mortal though he ſhould have a hundred yeers to ſearch into wonderful nature for it is unſearchable and the Creator of all wonders, let him injoyne himſelf ſilence, neither let him glory in the knowledge of it who hath not made tryal of it, for in it, through it and by it nature and art do ſtrive for perfection: of which more elſe where.

Now follows its uſe.

Having mentioned *Antimonial Regulus*, which is lead, and better then the common, It muſt alſo purifie impure metals, waſh them, ſeparate the occult gold and ſilver in them; that which common can do, to which if thoſe be added, it attracteth the more impure part in the cupel, which it converteth into droſs, and draweth down with it into the porous aſhes, leaving the purer gold and ſilver in the cupel: but from ſome tin and copper not yeelding to the lead nor willing to be waſhed by it, it cannot extract their gold and ſilver; neither hath any one writen the way of ſeparation by it. *Lazarus Erker* indeed hath deſcribed (and others alſo) the way of ſeparating ſilver from tin and iron, which is not to be diſeſteemed if it be accidentally mixed with ſilver, which is ſeparable that way, but not ſo being generated in, and radically mixt with them, requiring other lead willingly embracing tin and iron, which nothing but *Regulus* can perform.

But ſeeing tin and iron do for the moſt part containe much gold and iron (but chiefly tin) *viz.* inſeparable by the common way, it will be worth our pains to ſeek another lead and way of ſeparation; as it is apparent to refiners, proving tin and iron by the common way on a teſt; whileſt tin and iron melted in the lead, do forthwith ſhew their ſtubbornneſs by inate proprieties and forſake it, *viz.* as a contrary riſing to the top like droſs or aſhes, without any ſeparation, gold and ſilver being excepted if accidentally mixt together, which are left with the lead; but not ſo being hid in their middle or center. But that the truth hereof may appear I will demonſtrate it by example, Place on a teſt under a tyle 16. parts of lead and one of tin, after the manner of proofes, give a fuſing fire for to ſeparate the droſs; and all the tin almoſt flying away will at the bottome be burnt, and ſeparated like aſhes, being ſublimated on the top of the lead; not deprived of its gold and ſilver incorporated together, which afterward I ſhal demonſtrate when all the tin is ſublimated from the lead, and calcined, and the tyle taken from under the teſt, and the reſt of the lead powred off, and you ſhall finde after cupellation no more ſilver than the ſixteen parts of lead did containe before, if they had been cupelled without tin; ſometimes leſs, ſome part being taking away by tin in the examination: the ſame is done with iron, although thou ſhouldſt add copper with glaſs of lead to retaine the tin and iron thereby to ſeparate their gold and ſilver, you would effect nothing: for although ſome more ſilver may hereby be extracted, yet that would not come from tin or iron but copper: it may therefore be extracted another may of which hereafter.

In the mean while I will prove cleerly that the ſeparation of tin and iron by common lead, thereby to get their gold and ſilver, is of no value, which being left in them are turned into aſhes and droſſe.

Take any Tin and reduce it into aſhes by lead, or agitation on a ſmooth earthen veſſell (tryed before by the common way for diſtinction ſake, which calcine well, that the corporeall tin powdered may be calcined, or being melted may be ſeparated from the aſhes. Then take of theſe aſhes one part, and of the following flux, or of that a little after ſix parts or more, being mixt fuſe them in a ſtrong crucible with a ſtrong fire; untill the flux have conſumed or drunk up all the calx of the Tin, and of them both ſhall be made one, *viz.* yellow or red glaſſe, which may be tryed with a crooked wier put in: which if it ſeeme not clear the crucible muſt be covered again, and a greater fire be given, untill the fire be perfect; which labour in one halfe houre is finiſhed: which done poure it into a braſſe mortar, afterward to be covered untill it be a cold that it leap not out and be loſt.

Afterward powder it, to which mingle to the calx of Tin, the weight of filings of Iron; being mixt put them into a ſtrong crucible (becauſe the flux is very penetrative) covered, and give a ſtrong fire for fuſion half an houre: which done poure it out for Tin hath made ſeparation, and reduced ſome part of lead out, of the flux, ſinking to the bottom to be ſeparated when it is cold, to be reduced into droſſe on a teſte, and then to be cupelled, and you ſhall finde grain gold drawn from Tin without ſilver. And if before you weigh the calx of Tin leſſe than 100 weight, and after that the graines of Gold, you may eaſily conjecture how much Gold is contained in the whole hundred weight of Tin aſhes, *viz.* at the leaſt 3, 4, 5 or 6 *lotones* if thou work aright.

See then the fault is not to be imputed to the metals, but us, being ignorant of the ſeparation of the Gold and Silver.

You ſhould not perſwade your ſelfe by this means to get much wealth out of Tin; for I have not written this for that end, but only to demonſtrate the poſſibility. And if thou think that gold wil come out of iron by the flux, mingle then filings of Iron with the flux, before thou put in calx of Tin, and thou ſhalt find in ſo doing that Gold doth come neither from the flux or iron but out of tin, then being hereby aſſured that 'tis the tin which contains gold, thou mayſt conſider how, moſt conveniently that may be extracted, *viz.* with other Lead, and another way, as ſhal be hereafter taught. Neither think that tin contains no more Gold then you have heard; for more there is if you can wiſely extract it. Neither doe I deny that more Gold may be extracted out of the tin; but more care then this is to be given, if you deſire more plenty. But Gold may thence be extracted not onely by flux but divers other wayes, in divers weights; for what is written is only for demonſtration of the poſſibility, of Gold being contained in imperfect may to be extracted by a ſecret ſeparation.

The flux requiſite to this worke.

℞ one part of very pure and white ſand or flints, having no Gold fuſible; to which add three parts of Litharge of Lead; being mixt fuſe in a very ſtrong fire, that thereof a tranſparent glaſſe may be made of it, which poure out that it may be cold, and reduce it to powder, which uſe in the aforeſaid manner. But you may ask why ſand & flints are mingled ſeeing they are not of a metallick nature: to which I ſay; the calx of tin, cannot, as alſo other foſſiles, be examined by lead alone, for the following reaſons, *viz.* becauſe in the calcination of tin, its metallick nature is hidden, but the impure and earthy parts are manifeſt, wherefore it hath no longer affinity with Lead and other metals; unleſſe the hidden parts of the lead be manifeſt and alſo other metals and the manifeſt be hidden, for

th

then they eaſily embrace one the other, and are again mingled well, and not altered.

What belongs to the alteration of other metals doth not belong hither; for to this place only pertain Lead and Tin, the alteration of which is demonſtrated by this triall; whereby it appeares to be thus.

Lead reduced into aſhes by it ſelfe or into Lithargie, and deprived of its metallick form, cannot ſo in this worke be uſed without the flints or ſand, for the following reaſon. The lead and glaſſe thereof made by it ſelfe is very fuſible and volatile; but the *calx* of tin is very difficutly fuſed: which two *calx's* although they ſhould be mingled to fuſe in a crucible, yet would not be mingled, nor being fuſed imbrace one the other for the difference of their fuſibility; becauſe the *calx* of lead alone being fuſed by a ſmall fire will perforate and penetrate the crucible the *calx* of Tin being left in the crucible: wherefore you muſt adde ſand or flints to the lead, *viz.* to hinder its fuſibility, that it may endure the ſame degree of heat with thoſe that are difficultly fuſed and further their flux. For like things doe mutually affect and embrace each other; as water doth water, oyl oyl, and glaſſe glaſſe; and metals other metals; but water is not mingled with oyl; neither are glaſſes mingled with metals, but metals with metals, and glaſſe with glaſſe, whether it be made of metals or out of ſand. Wherefore they greatly erre who mingle the *calx* of metals difficultly miſcible, or other hard things with lead to prove or examine, not conſidering that corporeall lead hath no affinity with them: who remaining in their errour and not weighing the thing further, conſequently can find nothing of any moment.

But when the *calx* of metals united with lead by a *medium* as flints or ſand, are brought together into tranſparent glaſſe; then the lead being precipitated and ſeparated from the mixture, it cannot be but that the gold and ſilver contained in them muſt be carried away with it. This is a true and philoſophicall tryall and not to be contemned, for many things may by it be performed.

N. B. But this is not to be paſſed by, that in the mutuall mixture and fuſion of the glaſſe of lead and the *calx* of tin, and other hard metals, one may eaſily erre, *viz.* in the precipitation (which is done with the mixture of iron) of the gold with the lead into *Regulus*, by either the exceſſe or defect ſo that nothing may be gotten, which is committed in precipitation. For if the mixture ſtand long in the fire not fuſed, it is burnt, ſo that it cannot well be ſeparated, and if it ſtand too long fuſed in the fire, the gold is attracted by the droſſe, by reaſon of the mixture of the iron, having great affinity with the gold, ſo that by this meanes nothing can be gotten: wherefore the work is to be done warily, and with wiſdome and induſtry. You muſt have a care you burne not the *Regulus* of lead with too much fire, when you reduce it into droſſe; for fear of attracting the gold from the iron and turning it into droſſe. And although this may by art be prevented, yet we muſt not preſently create every one *Maſter* of *Arts*, it requiring diligence and daily exerciſe, beſides the reading of Bookes. But this ſecret ſhall other where be communicated.

This admonition then I give that thou doe not impute thy errour (if thou doſt erre) to me, but to thy ſelfe, for what I have written is true: and doe not thence infer an impoſſibility of attracting gold by iron out of lead, and of turning it into droſſe, which is no wonder to me though it may ſo ſeem to thee. Which he who hath the knowledg of metals wil himſelf eaſily perceive. But that thou maiſt be certain, try the certainty after the following manner: take two hundred *lib.* of lead of the leſſer weight of the refiners, put it on a teſt under a tyle; adde eight or ten *lotons* of pure gold, of tin two or three *l.* ſix or eight of iron, *viz.* of the leſſer weight: make them flow together an houre to make droſſe; as examiners uſe to doe: then poure it out and ſeparate the lead from the droſs, *viz.* to cupell that which is eparated, then weigh the grains of gold left, and thou ſhalt finde half of it conſumed by the droſſe. If this happen to corporeall gold and fixt, how will it be with that which is newly extracted out of an imperfect metal?

metall? therefore you muſt diligently ſearch out the natures of metals and then ſuch caſes ſhall not ſeem incredible.

From hence then and other examples mentioned it appeares, that that ſeparation which is done by teſts and cupels is not true and legitimate; and conſequently that another profitable ſeparation of metals is to be ſought; becauſe by this the greater part of gold and ſilver burns into droſſe, witneſſe experience, for which cauſe the former example was alleadged; whither belongs the proof, *viz.* how much gold the droſſe hath attracted, which is done as followeth: ℞ the remaining black droſſe; to which adde a double weight of ſalt of tartar, put in it a crucible filled but to the half (for fear of boiling out) and covered that nothing fall in, under a tyle or among live coals, one or two hours ſpace to digeſt; and a new *Regulus* of lead ſhall be precipitated, which ſeparated from the droſs you may cupel, and you ſhall finde new graines of gold attracted by the iron to the droſs, but now ſeparated by the ſalt of tartar, overcoming the rage of the iron. And ſo you have heard from two examples, how in the coction of the ſeparation gold may be drawn out of the lead by tin and iron, and that therefore there is need, that gold be ſeparated by the *Antimonial Regulus* out of the aforeſaid metals, and not by lead, if you would extract the true ſubſtance with gaine.

N. B. Gold may likewiſe be ſeparated out of the glaſs of lead (being firſt diſſolved with the aſhes of tin) with coal duſt, adding it in the flux and ſtirring it with an iron wier; and alſo with common ſulphur, by burning it on it: but the aforeſaid way with iron, is to be preferred before thoſe two which ſpoyle the gold, &c. wherefore the remaining droſs is to be gathered, which by ſome abſtracting furnace by other means may be tryed for to recover the ſpoyled or loſt gold and ſilver.

And all theſe are alleadged to demonſtrate that the gold in tin and iron is to be ſeparated by the *Antimonial Regulus* and not by lead. But how this ſeparation may be perfected, you ſhall here in that third part where we will treat of lead explained by *Paracelſus* in his book called *Cœlum Philoſophorum*, and other artificial Chymical labors: wherefore here we omit it being ſuperfluous to handle one thing in diverſe places. In the mean while exerciſe thy ſelf in leſſer things, that thou maiſt be more fit for greater when they ſhall be ſet forth. But wonder not at my liberality in publiſhing ſo great ſecrets, for I have reaſons for it. Such a burden is too much for me alone, neither doth it profit the covetous to ſell his goods to them which keep not their words, nor pay the mony, after they have obtained their art, which hath happened to me. Wherefore I have determined to communicate ſome ſecrets to all the world indifferently that the poor may receive ſome profit by them; knowing that though I write plainly, yet that al wil not at the firſt view obtaine their deſires. For ſome are ſo dull that they cannot imitate a work though often ſeen. For ſome have often viſited me to ſee my new maner of diſtilling, which though it was ſufficiently demonſtrated to the eye, yet they could not imitate it, till with often peruſals at length they have found the right path. Others have left it as too hard a work when it would not preſently ſucceed, which if it happened to thoſe who had an occular demonſtration, how much more difficult will it be and hard to them who have nothing but what they have heard or read. Wherefore I am certain that though I ſhould publiſh every one of my ſecrets, yet could they not be performed by all men, my coals and materials being left ſufficing for my neceſſity. Wherefore I fear not to publiſh, the next opportunity offered, diverſe profitable and exeellent ſecrets, *viz.* in favor of all and every one.

As for that ſpirit of ſalt neceſſary to this work, you may finde it in the firſt part of my Philoſophical Furnaces corrected and amended; but the way of ſeparation in the fourth part.

And ſo I finde this work publiſhed in favor of thoſe who by war (though honeſt men) are reduced to poverty. But what things are deficient in this little tract ſhall (God willing) be delivered in the next (which ſhall follow in a ſhort time) largely and cleerly without fraud.

FINIS.

The Contents of the firſt Part.

OF the ſtructure of the firſt Furnace 1
Of the receiver. 2
The manner of diſtilling 4
How the ſpirit of ſalt is to be diſtilled 9
Of the uſe of the ſpirit of ſalt 12
A diſtillation of vegetable oyles, whereby a greater quantity is acquired, then by that common way by a gourd ſtill 13
The cleare oyle of Maſtick and Frankincenſe 15
The quinteſſence of vegetables 18
The quinteſſence of metals and minerals. ibid.
A ſweet and red oyle of metals and minerals 19
The oyle or liquor of gold ibid.
Oyle of Mars 20
Oyle of Venus 21
Oyle of Jupiter and Saturne ibid.
Oyle of Mercury 22
Oyle of Antimony ibid.
The flowers of Antimony white and voltill 24
The flowers of Antimony diaphoretical 25
Of the external uſe of the corroſive oyl of Antimony ibid.
The oyle of Arſenick and Auripigmentum 26
Oyle of lapis calaminaris ibid.
The uſe of the oyle of lapis calaminaris. 27
Of the extrinſecal uſe of the ſpirit of ſalt in the Kitchen 29
How an acid ſpirit or vinegar may be diſtilled out of all vegetables, as hearbs, roots, woods, ſeeds, &c. 31
The ſpirit of paper and linen cloaths 32
The ſpirit of ſilk 33
The ſpirit of mans haire and of other animals, and alſo of horns ibid.
The ſpirit of vinegar, honey and ſugar ibid.
How the ſpirits may be made out of the ſalt of tartar, vitriolated tartar, the ſpirit of ſalt tartariſed, and of other ſuch like fixed ſalts 34
Lac virginis, *and the Philoſophical ſanguis draconis* 35
The ſpirits, flowers, and ſalts of minerals and ſtones 36
How minerals and metals, may be reduced into flowers, and their vertues 36
Of gold and ſilver 37

Flowers of iron and copper 38
Flowers of lead and tin 39
Flowers of Mercury ibid.
Flowers of Zinck ibid.
The uſe 40
Flowers of Antimony 41

The Contents of the ſecond Part.

The ſtructure of the ſecond furnace 51
The way or the manner to perform the diſtillation 52
How to make the acid oyle & the volatile ſpirit of vitriol 55
Of Vitriol ibid.
The uſe and doſe of the narcotick ſulphur of vitriol 57
Of the uſe and vertue of the volatil ſpirit of vitriol 58
Of the vertue and oyle of the corroſive oyle of vitriol 59
How to make the vitriol of Mars and Venus ibid.
The way to make a faire blue vitriol out of Luna, that is ſilver 60
Of the ſweet oyle of vitriol 67
The preparation of the ſweet oyle of vitriol 70
The uſe and the doſe of the ſweet oyle of vitriol 72
Of the ſulphurous volatile and acid ſpirit of common ſalt and of Allome 74
The manner of preparing 74
Of the ſulphurious volatile ſpirit of minerals & of their preparation 75
The preparation of the volatile ſpirit of metals 75
The preparation of the volatile ſpirit of minerals ibid.
Another way ibid
The ſpirit of Zinck 76
The volatile ſpirit of the droſs of Regulus Martis ibid.
How to make a white acid and red volatile ſpirit out of ſalt nitre ibid.
Of the uſe of the red volatile ſpirit 77
The uſe of the white acid ſpirit of ſalt nitre ibid
Aqua Regis 78
The preparation of Aurum Fulminans ibid.
The uſe of Aurum Fulminans 83
The uſe of the tincture of gold 85
Of the flowers of ſilver and of its medicine 86
Of the uſe of the cryſtals of ſilver 87
How to ſublime the cryſtals of ſilver into flowers, and then to make a good medicine of the flowers 88

How to make a green oyle out of ſilver 89
The uſe of the green oyle in Alchymie and for Mechanical uſes 90
A medicine out of copper externally to be uſed 91
A medicine out of iron or ſteel 92
Of tin or lead ibid.
The uſe of the cryſtals of lead and tin ibid.
Of Mercury 93
Of Aqua fortis 96
Of the ſulphuriſed ſpirit of ſalt nitre 98
Of the Cliſſus. ibid.
Of the tartariſed ſpirit of nitre 99
Of the tartariſed ſpirit of Antimony 100
Of ſtone coales 101
Of the ſulphurious ſpirit of ſalt nitre or Aqua fortis 101
Of the nitrous ſpirit of Arſenick 102
To make a ſpirit of ſulphurous crude tartar and ſalt nitre ibid.
To make a ſpirit out of ſalt of tartar, ſulphur and ſalt nitre ibid.
How to make a ſpirit of ſaw duſt, ſulphur and ſalt nitre 103
To make metallical ſpirits and flores by the help of ſalt nitre and linnen cloth 104
Of gunpowder ibid.
How to make a ſpirit of gunpowder 107
Of the uſe of the medicine or tincture made of gunpowder 109
To make ſpirits and flowers of nitre and coales 110
To make flowers and ſpirits of flints, cryſtal, or ſand, by adding of coales and ſpirit of ſalt nitre to them 110
To make a ſpirit and oyle out of talck and ſalt nitre 111
To make a ſpirit, flowers and an oyl out of tin 112
To make a ſpirit, flowers and a liquor out of Zinck ibid.
To make a ſpirit flowers, and a oyle of lapis calaminaris 113
To make ſpirit of ſalt nitre, ſulphur and common ſalt 114
To make a ſpirit, flowers and oyl out of ſalt nitre and Regulus Martis 114
To diſtil Butyrum out of Antimony, ſalt and vitriol, like unto that which is made out of Antimony and Mercury ſublimate 118
To diſtil butyrum of Arſenick and orpiment ibid.
To make a rare ſpirit of vitriol 119
To make a ſubtle ſpirit and pleaſant oyle of Zinck 120
To diſtil a ſpirit and oyle out of lead 121
To diſtil a ſubtle ſpirit and oyle out of crude tartar 122
The preparation and uſe of the ſpirit of tartar 123
How to make pretious ſpirits and oyles out of tartar joyned with ſome minerals and metals 126
The uſe of the metalliſed ſpirit and tartar ibid.

The other way to make a metalliſed ſpirit of tartar 130
To diſtil the ſpirit and oyle of lead and tin
How to make a tartariſed ſpirit and oyl out of iron & ſteel or copper 133
How to make a tartariſed ſpirit of Mercury 137
How to make a tartariſed ſpirit of gold and ſilver ibid.
To make a tartariſed ſpirit of antimony 139
How to make good ſpirits and oyles out of pearls, corals, and crabs eyes, and other light ſoluble ſtones of beaſts and fiſhes 146
To diſtil a ſpirit out of ſalt of tartar, and crude tartar 147
How to get a powerful ſpirit out of the ſalt of tartar by the help of ſand or peble ſtones ibid.
How to extract a blood red tincture with ſpirit of wine out of peble ſtones 150
The uſe of the tincture of pebles or flints in phyſick 151
How by the help of this liquor out of gold its red colour may be extracted ſo that it remaines white 153
Another way to extract a tincture out of gold by the help of the liquor of ſand or pebles 159
What further may be done with the liquor of pebles 160
How by the help of this liquor to make trees to grow out of metals, with their colours ibid.
Of the ſpirit of urine and of the volatile ſpirit of ſalt Armoniack 162
The proceſs or manner of making it is this 163
Of the uſe or vertue of the ſpirit of ſalt Armoniack 166
To diſtil a blood red oyle of vitriol by the help of the ſpirit of urine 167
The tincture of vegetables 168
Vitriol of copper ibid.
The tincture of crude tartar ibid.
To make the oyles or liquors of ſalts ibid.
To precipitate all metals with it ibid.
The oyle and vitriol of ſilver 169
To extract a red oyle out of Antimony or common ſulphur ibid.
How to ripen Antimony and common ſulphur, ſo that ſeveral ſorts of ſuch like ſmels, as vegetables have ariſe from thence 171
Of the ſpirit and oyle of harts-horne 171
To make the ſpirit of mans haire an excellent medicine 172
Of the oyle of Ambar 173
Of the oyle of ſoot 174
How to make a good oyle out of ſoot without diſtilling ibid.
Of the ſpirit and oyle of honey ibid.
Of the oyle and ſpirit of ſugar 175
To diſtil an excellent ſpirit and blood red tincture of coals and ſugar 176
Of the ſpirit of Muſt or new wine ibid.
Of oyle olive 177
The uſe of the bleſſed oyle 179

Of the oyle of wax ibid.
A good ſpirit for the ſtone ibid.
Of the ſpirit or acid oyle of ſulphur 180
To the Courteous Reader 181

The Contents of the third Part.

A Preface of the copper inſtrument and furnace 185
Of wooden inſtruments that are to be uſed in ſtead of ſtils, baths and cauldrons 189
The preparation of the veſſel 192
The making of a wooden veſſel for a Balneum, which is to be uſed in ſtead of copper and leaden cauldron for digeſtion and diſtillation by glaſs veſſels 193
A wooden veſſel ſerving for boyling of Beer, Metheglin, Vinegar, &c. as well as copper, iron, and tin veſſels ibid.
A wooden veſſel for a bath, for ſweet or mineral waters which may be according as you pleaſe kept warm for the preſervation of health 194
Of the uſe of wooden veſſels in diſtilling, boyling, bathing, &c. and firſt of the wooden veſſel ibid.
Of the preparation of the lees of wine, beer, hydromel and other drink ibi.
Of the preparation of all kinde of corn as wheat, oats, barley, &c. which muſt go before the diſtilling of the ſpirit 195
Of the difference of malting 196
Of the fermentation of malt 197
Of the Fermentation of honey 198
Of the preparation of hearbs, flowers, ſeeds, &c. ibid.
An Annotation 199
The manner of diſtilling in general followeth 202
The manner of diſtilling ſpices, ſeeds, flowers, hearbs, roots, woods &c. 203
How oyles are to be coagulated into balſoms 204
The manner of preparing follows 206
There follows now the uſe of the ſecond wooden veſſel which is to be uſed in ſtead of thoſe of copper or lead ſerving for diſtillations, digeſtions, extractions and fixations 208
And firſt of a volatile extract ibid.
A purging extract 210
A diaphoretical extract 211
A diuretical extract 212
A Somniferous extract ibid.
A cordial extract 213
Of an odoriferous extract 214
Of baths 215
Of a bath of ſweet or common water 216
Of the nature and property of natural baths ibid.
And firſt of ſulphureous bathes that have a ſubtle acidity 218
The mixture of thoſe ſubtile mineral, ſul-

ſulphureous and ſalt ſpirits with water 220
Of ſulphur baths 221
The uſe of the copper globe in dry bathes, which are more excellent then the moyſt in many caſes 222
Now follows a wooden veſſel which is to be uſed in ſtead of a cauldron in boyling of beer, vinegar, metheglin,&c. 226

The Contents of the fourth Part.

O*F making the Furnace* 233
How minerals are to be tryed 238
Of the melting of mines and metals 243
Of the ſeparation of metal ibid.
Of ſeparating courſer metals 247
What is to be held concerning the perfection of metals 248
Another demonſtration by a dry way 255
Of the Philoſophers ſtone 262
Whether minerals, as antimony, arſenick, orpin, cobolt, zinck, ſulphur, &c. *may be tranſmuted into metals, and into what* 265
Another way of ſeparating the ſuperfluous Antimonial ſulphur 268
Of the tincture of Sol and Antimony 269
Another tincture and medicine of gold 272
Of looking glaſſes 273
Metalick mixaure for the matter of the glaſſes 276
Of the ſmoothing and poliſhing looking glaſſes 278
Of mettallick glaſſes 280
The colouring of the foreſaid veſſel follows in which it is made moſt like to Venice 284
Of the preparation of the colours for the colouring the maſs of flints and cryſtals 285

The Contents of the fifth Part.

O*F the preparation of the furnace* 293
Of the preparation of the furnaces 297
A lute for the errecting of furnaces 298
Of the cloſing of the joynts hindering the evaporation of ſubtile ſpirits 299
Another lute for broken glaſſes 300
How thoſe ſubtle ſpirits when they are made may be kept that they evaporate not 301
How glaſs ſtoples are to be ſmoothed with

with grinding for the retaining of ſubtle ſpirit in their glaſs veſſels 303

Of the making of the beſt crucibles 313

Of the vitrification of earthen veſſels belonging to the firſt and ſecond furnace 320

Of the uſe of the foreſaid cups 324

An Appendix 328

Annotations upon the Appendix of the fifth Book.

A *Preparation of corn, wheat, barley, oates,* &c. *alſo of pears, apples, cherries, and other tree fruits, to be performed by the help of fermentation, when thorough the help of diſtillation they yeeld a very good and moſt pure ſpirit, very like that which is made of the lees of wine without great coſts, where alſo from the Remainders of the corn (the burning ſpirit being drawn off) may be made a very good beer or vinegar; and of the remaines of the fruit a very good drink like to wine, whence there is a double benefit, ſo that any one may not only have from thence wherewith to live, but alſo to lay up* 338

The making of wine not unlike to Rheniſh, French, or Spaniſh, that ſhall endure for many yeers, out of corn or fruits 340

A making of a burning ſpirit, out of the baſer ſort of things, which are commonly known, like to that made out of Rheniſh and French wine, and at an eaſie rate 343

The making of ſugar (like to that of the India*) and of tartar (like to that of the Rheniſh) out of honey, not coſtly, ſo that the price of one pound of ſugar doth not exceed eight or ten ſtivers, and a pound of tartar exceed not the price of two ſtivers* ibid.

A peculiar purification of vulgar impure tartar, without any loſs, and the cryſtallizing or reduction of it into great cryſtals, a pound whereof being purified doth not exceed the price of ſix ſtivers 347

The taking away of the ungrateful odour avd taſt of honey which being taken away, there is drawn forth out of honey a very good burning ſpirit which ſavours not of the qualities of honey, and alſo a hydromel like to natural wine in taſt and other vertues,&c. ibid.

The making of a hydromel, very good and clear out of raiſins both greater and ſmaller, reſembling the beſt Spaniſh wine out of which alſo is made a very good and cleer vineger ibid.

How good wines, and good vinegars, may be made in thoſe places, where grapes grow in unmanuered places, and are acid 349

Alſo the preparation of wholeſome

drinks out of gooſe-berries, barberries, mul-berries and other wilde fruits 351

The correction of troubled viſcous wines and ſuch as begin to be red, muſty and ſowre ibid.

A very eaſie making of vinegar in great quantity out of certaine vegetables that are every where to be had, viz. very good cleer and durable like to French vinegar, &c. 352

A production of wines in cold places, which otherwiſe by reaſon of the cold aire do not bring forth wines (the coldeſt places of all only excepted) viz. of the beſt, ſweeteſt, odoriferous, and durable, not giving place for goodneſs, clearneſs, &c. to thoſe that are made in Germany, France, Italy and Spaine 352

A certaine ſecret, by the help whereof wines are eaſily tranſported from mountainous places, remote from rivers and diſtitute of other conveniences of carriage, ſo that the carrying of ten veſſels is of a cheaper price then otherwiſe the carrying of one 353

A very eaſie preparation of verdygreaſe out of copper, of which a pound doth not exceed the price of ſix ſtivers 355

A new and unheard of diſtillation of vinegar, of which two runlets of nine gallons exceed not the price of half a royal, with which many excellent things may be done, eſpecially the cryſtallizing of verdygreaſe, of which one pound doth not exceed the price of half a royal 355

A very eaſie diſtillation of the moſt ſtrong ſpirit of urine very ſpeedy not coſtly nor tedious, where twenty or thirty pints may be made for a royal whereby many excellent things may be done in phyſick, alchymie and mechanical affaires, but eſpecially with it vitriol is made out of copper, very beautiful, blue and moſt excellent in medicine and alchymy with which ſilver is made ſo fuſile that by the help thereof glaſs veſſels, may as well inwardly as outwardly be gilded ſo as to appear like ſilver 356

A moſt eaſie & not coſtly way of the diſtilling of the ſpirit of ſalt, of which one pound may be ſold for ſix ſtivers, and it is very profitable in medicine, alchymie, &c. 357

The ſeparation of gold from ſilver without hurt to the jewels, alſo the ſolution and ſeparation of gold, that containes ſilver and copper, and the precipitation of gold from the water without any hurt to the water ſo as that it may ſerve for the ſame uſes againe, &c.

The ſeparation of gold from pure fat clay, ſand, flints, &c. which other wayes could not be ſeparated either by the help of waſhing or white Mercury or by melting 359

A new and unheard of proving of

tough and ſtubborn minerals, viz. of all and each, whereby their nature and and form is found out, the which cannot be done otherwiſe by any vulgar way 366
A new compendious way, whereby minerals are ſpeedily in a great quantity melted, and that not without great profit 367
A better way to ſeparate things melted: A better ſeparation of ſilver from lead 362
How minerals in defect of coals made of wood may be melted by the help of pit coals 364
The fixations of ſulphureous, Arſenical, Antimonial and other volatile poyſonous minerals 365
A profitable ſeparation of ſparkling, ſpongious and thin gold and ſilver from ſand, pure clay and flints, &c. 366
A profitable and ſecret melting of gold contained in baſer metals and minerals, which cannot be done by any common way 367
A ſpeedy ſeparation of gold and ſilver by the help of fuſion, with leſs coſt and labor then by Aqua fortis or cements 368
A ſpeedy reduction of wrought gold to the higheſt degree, alſo an eaſie ſepartion of gold from gilt ſilver ibid.
The ſeparation of ſilver in a greater quantity out of lead then by the uſe of cuples 369
The melting of good gold out of old iron 370
A ſeparation of gold and ſilver from any tin or copper 373
A maturation of mines that they may give more gold and ſilver in the fuſion 375
A ſeparation of gold and ſilver out of Arſenick, Auripigmentum and Antimony 377
A ſeparation of extrinſecal ſulphur of Venus for the production of her ſon Cupid ibid.
The ſeparation of ſilver from the teſts which entered into them in time of trying without melting and without labour and coſts 379
A cheape making of fine earthen veſſels like to the percelane retaining ſpirits, reſiſting the fire, and to be made in any place of the world ibid.
A confection of allome exalting and fixing any colours, eſpecially requiſite for ſcarlet and other pretious colours, as alſo a preparation of a cauldron, that ſhall be cheap and not alter colour 380
A cheap preparation of colours for painting, as of purple, &c. but eſpecially of a moſt fine white never yet ſeen moſt like the fineſt pearls, alſo of a ſilver and golden colour 381
The concluſion 383
To the Malitious 389

Of Aurum potabile 393
Of the medicinal uſe of this gold medicine 403

The Contents of the firſt part of the Mineral Work.

A Preface to the Reader 409

A moſt profitable ſeparation of gold out of flints, ſand, clay, red and black talck and other foſſiles, containing very ſubtle gold, thin & ſpongious, which otherwiſe cannot be ſeparated either for its ſcarcity, or the obſtinency of the mineral by the reaſon of the great coſt to be beſtowed, viz. very eaſily with the ſpirit of ſalt 411

The preparation of flints and the extraction of the gold contained in them by the ſpirit of ſalt 417

The work to be performed by funels 420

How impure gold may be ſeparated and purged by Antimony 422

The way of ſeparating gold and ſilver from Antimony 424

The uſe of Antimonial Flowers 425

The preparation ibid.

An admonition 427

Of the vertues of this medicine 429

Of the uſe and doſe of this medicine 431

Now followeth the vertues which it manifeſteth in metallicks 439

How the Regulus of the flowers and droſs of Antimony is to be uſed in the bettering of courſe metals 442

Its uſe 445

The flux requiſite to this work 448

FINIS.

READer, Impute the multiplicity of Errata's partly to my abſence whileſt this treatiſe was under the preſs, conſidering alſo that the ſecond part thereof was tranſlated by a German, who (though otherwiſe very learned) yet might not haply be exactly skilled in all the proprieties of our Engliſh tongue, whence ſometimes the ſingular number is put for the plural, his for its, he for it and on the contrary : and ſuch like petty miſtakes; conſidering alſo that the fourth part was tranſlated by another, who might not be acquainted ſufficiently with tearms of art, and a ſmooth Engliſh ſtile; beſides the Printers aptneſs ſometimes to miſtake the copy being writ with diverſity of hands and ſome bad. If thou pleaſe with thy pen to correct what here I have obſerved thou will hardly meet with any more that may pervert thy judgement or occaſion thy miſtake, unleſs in a curſory ſurvey I might omit ſome few, for the mending of which thy ingenuity and candor, which is craved, will be ſufficient.

PAge 1. *line* 3. *p.* 2. l.1.l.9.l.18.*p.*4.l.19 *p.*5.l.25.*p.*6.l.31.l.37.*p.*7.l.22.l.33.*p.*36.l. 30. *for water* read *matter.* *Page* 1.l.12.r. *neerneſs p* 2.l.5.r.*furnace* l.7.r.*by which* l. 26.r. *luteing p.*3.l.33.r.*neck p.*5.l.22.r *humidity* l.23.r.*metals p.*7.l.15.r.*luteing p.*8 l.3.r.*repeate p.* 9.l.19.r.*in a p.*20.l.6.r.*humors* l.34.r.*humours p.*28.l.24.r.*will not p.*29 l.22.r.*well p.* 45.l. 2.r.*ſcoriæ p.*52.l.6.r.*in an* l.12.r.*with a copple p.*53.l.4.r.*caſt* l.29.*or they p.*54 l.30 r.*any time p.*58.l.4.blot out *it p.*50.l.1.blot out *green p.*66.l.23.blot out *they p.* 57.l.18.r.*ſpoyled p.*69. l.26.r.*alſo the p.*73.l.11.r.*ſaying* l.28.r.*aire is p.* 78.l.16. blot out *now p.*84.l.17.r.*ſet upon the warm bottom* l.28.r.*is taken out p.*87.l.5.r.*and in* p.100.l.22.r.*ſulphur auratum p.*108. l.36.blot out *it p.* 117.l.25.r. *concerning the p.* 123.l.3. blot out *they p.* 227.l.22. blot out *it p.* 134.l.3.r.*heat p.* 135.l.15.r.*but uſe four p.*144.*l.*15. *but if he be not wary p.*148.*l.*37.r. *fine p.*149 l.27.r.*whoſcoure p.*162.l.7.r.*be fixed p.*169.l.3.r.*and mixe it with p.*171.l.26.*caſt in l.*34. *read, will paſs. page* 17.8.*l* 5.*read, caſt. page* 181. *line* 14. r. *caſt p.* 187.l.3.r.*bars* l.4.r.*neck p.* 191.l.32.r.*write p.*192.l.11.r.*ſet p.*193.l.3.r. *or fewneſs* l.19. r. *wider p.*196. l.1.r. *thoſe* l.14. *fault p.* 202. l. 16. r. *or filed p.*203.*l.*7.*r.diſtillation p.*206. *l.*34.*r.reunited p.*217.l.25.r.*heat* l.25. *know p.*221.l.32. blot out *is p.* 222.l. 26. blot out ~~*which*~~ *p.* 223.l. 6.r. *inwardly p.* 241. l. 23. r. *hematitis* l. 28. r. *aforeſaid manner p.* 243. l. 7. *ſuper p.* 247.l.30.r.*ſell p.*248.l.31.r.*ſeduce p.*250.l.6.r. *God hath p.* 251. l. 1.r. *ſet it in digeſtion and the oyles will attract out of the ſpirit of ſalt, ſalt enough* l. 2. *acquires* l.12.r.*and as by theſe two examples the perfection of metals is proved, ſo alſo* l.28. *refined p.*252.l.7.r.*ſeparated by its contrary, and bettered* l.20.*not appear p.*254.l.33.r. *which was mixed with* l. 35.r.*in a* l.37.r.*long ground p* 255.l.21.r.*augmenting the weight of gold* l.30. blot out, *of gold p.*256.l.2.r.*imperfect, perfect* l.24.r.*whence p.*257.l.2.r. *for the earth* l. 11. r. *operation* l.13.r.*his gifts will not ſhould be common* l.14.*being an* l.27.*many fear* l.28.r.*for the p.*258. l.27.r.*into p.*259.l.2.r.*coming* l.12.r. *the power of the ſun, and fire being diſcovered.* l.23.r. *from iron* l. 27.r.*retaine the mixt* l. 31. *to be underſtood of metals where p.* 260.l.28.r.*giving credit to theſe p.*261.l.27.r.*concerning the p.*262.l.15.*have been rather p.*263.l.37.r.*gift p.*265.l.11.r.*nature ſay they* l.21.r.*againe quickly periſhing p.*266.l.1.r.*be denyed* l.8. r. *embrionated* l.23.r.*as from* l.27.blot out *to* l.33.r.*conceive* l.37.r. *hidden in the aire p.* 267.l. 10.r. *minerals* l.21.blot out *though* l.25.r.*being afterward melted p.* 268. l. 8.r. *regulus* l. 10.r.*of minerals* l.18.r. *then that which is ſulphureous, with which being mixed it forſaketh* 269.l.10.r.*old Saturne* l.29.r.*grind very* l.33.r. *and that antimonial nitre will aſſume p.* 270.l.2.r.*leave in* l.10.r.*for taking* l.32.r. *in deſtroying, perfecting and tranſmuting metals by fuſion p.*271.l.17 r.*not but by* l.30.r.*and drawed off p* 272.l. 19 *being furniſht with the gold of covetous men p.*273.l.7.*out a* l.20.*conceive p.* 274.l.6.r. *a paire of compaſſes* l. 15. *lime or the* l.21.*the bottome* l.24.*ſmoother parts : if the* l.31.r.*and to ſmooth* l. 36 r. *put an earthen tunnel, and the mould into dry ſand to the top p.*275.l.17. *impreſſed on ſand or the* l.34. blot out *let p.*276.l.14.r.*acquired* l.26. *linſeed oyle p.*282.l.10.r.*without minium l.*32.

blot out *equal parts* p.284.l.4.r.*ſmooth and light iron* l.13.r.*by which* 285 l.1.r.*there will be made thence a ſtone* p.2 6.l.12.r.*forme* l.14.*take out* p 287.l.10.r.*afterward is poured into it* p.295.l.9.blot out *is* p.296.l.10.r.*cannot* p.302 l.27.r.*ſtopples* p 310.l.6.blot out *that* p.314.l.17.r.*glaſſes* p.315.l.14.r.*fatneſs of* p.321.l.31.r.*pour* p.322.l.37.r.*and not to* p. 331.l.30.r.*ſpared* p.352.l.27.r.*yet by art* p. 354.l.1.r. *conſiſtency* p.359 l.5.r. *pure clay*. p. 403. *l. r.wax-like earth.* **Page 188.** *The copper globes are here through miſtake left out, but the manner thereof you may ſee in the foregoing page.* **Part 4.** *for patterne, and types read moulds.*

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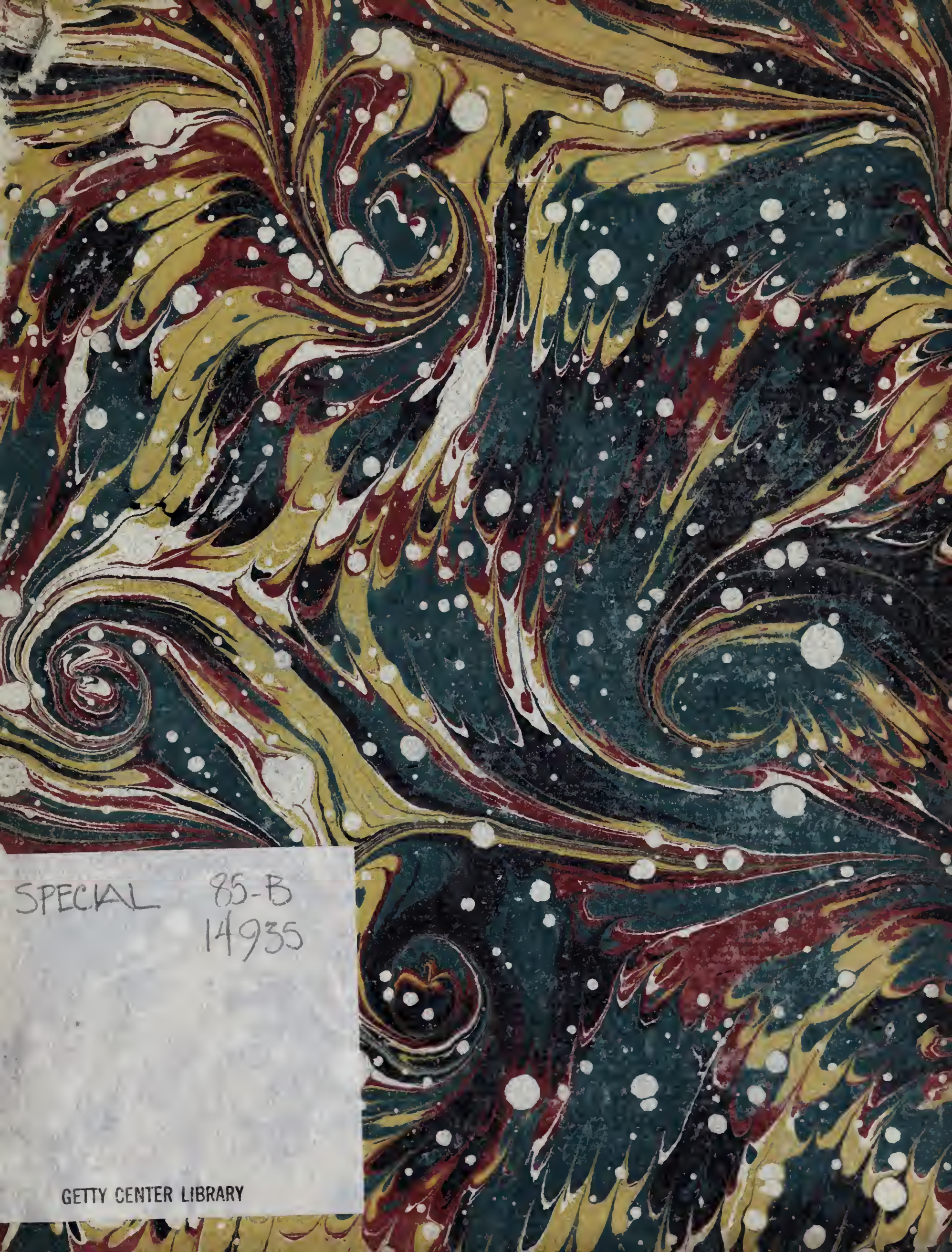

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